LENORA COLLEGE OF ENGINEERING

Rampachodavaram
E.G. Dist., A.P.

CERTIFICATE

Roll No.

This is to Certify that _____

Student of B. Tech _____ in Lenora College of Engineering. Rampachodavaram, E.G. Dt., He/She has Successfully complete His/ Her Record work in _____

during the academic year 20 - 20

Examine :

Internal :

Externam :

Lab Incharge :

Head of the Department

Lenora College Of Engineering

Rampachodavaram

IT Workshop Lab

B.Tech I-II

R23

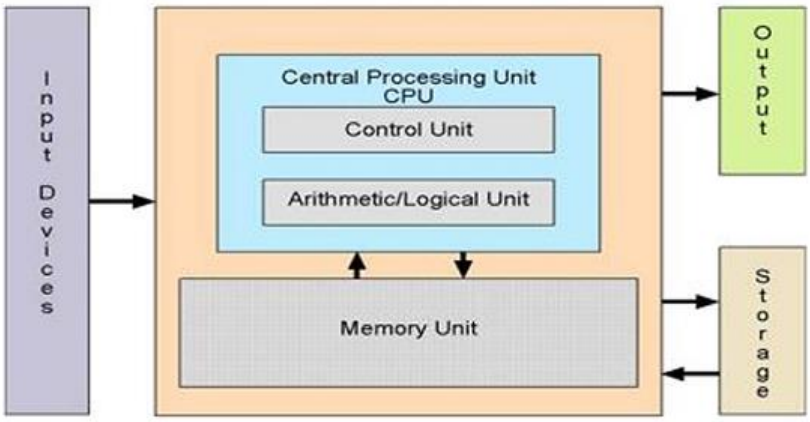
PC Hardware & Software Installation

Task 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.

Hardware Requirements: Cabinet, Hard Disk, CD/DVD Drive, Floppy Drive, Monitor, Mouse, Keyboard, Mother Board, Socket 478, Processor, Heat Sink Fan, RAM Slots, PCI Slot, AGP Slots, CMOS Battery, BIOS, North Bridge, South Bridge, IDE Slots, SMPS, ATX power Connector.

Software Requirements: Not Required INTRODUCTION TO COMPUTER: A computer is a programmable machine or computer is an electronic device which takes the input information from the input device, process or executes the input in Processor or CPU and generates the output information through output devices. Computer enables arithmetic computations, data processing, information management (storage) and knowledge reasoning in an efficient manner.

BLOCK DIAGRAM OF COMPUTER



The computer system has three major components:

1. the central processing unit (Processor),
2. the input and Output Units, and
3. the Memory Unit (Main Memory and Auxiliary storage).

1. Central Processing Unit (CPU / Processor)

This is the brain of the computer.

It does all the thinking, calculations, and decision-making.

It controls and manages the other parts of the computer.

The CPU has two main parts:

Arithmetic and Logic Unit (ALU) – This does maths (like addition, subtraction) and logical operations (like comparing two numbers).

Control Unit (CU) – This tells the computer what to do and when to do it.

2. Input and Output Unit

Input devices help us to give data or commands to the computer.

Example: Keyboard, Mouse, Scanner, Microphone.

Output devices show us the result after processing the data.

Example: Monitor, Printer, Speaker.

3. Memory Unit

This is where the computer stores data.

It has two types:

Main Memory (Primary Memory) – Like RAM (Random Access Memory) and ROM (Read Only Memory). This is fast but small in size. It stores data that the CPU is using right now.

Auxiliary Storage (Secondary Memory) – Like Hard Disk, Pen Drive, CD, DVD. This is used to store data for long-term use.

💡 Summary:

The CPU processes the data, Input/Output devices help us to interact with the computer, and the Memory stores the data. All three work together to make the computer system work properly.

What is a peripheral device?

A peripheral device is a device that either enters information into a computer system or receives information from the computer system. The normal workflow of a computer system is the following.

Classification of Peripheral Devices

It is generally classified into four basic categories which are given below:

1. Input Devices:

An input device is defined as a device that converts incoming data and instructions into a pattern of electrical signals in binary code that are comprehensible to a digital computer.

- **Keyboard:** A keyboard is an input device that allows users to enter text and commands into a computer system.
- **Mouse:** A mouse is an input device that allows users to control the cursor on a computer screen.
- **Scanner:** A scanner is an input device that allows users to convert physical documents and images into digital files.
- **Microphone**: A microphone is an input device that allows users to record audio.

2. Output Devices:

An output device is generally the reverse of the input process and generally translates the digitized signals into a form intelligible to the user. The output device is also performed for sending data from one computer system to another. For some time punched card and paper tape readers were extensively used for input, but these have now been replaced by more efficient devices. Example:

- **Monitor:** It is an output device that displays visual information from a computer system.
- **Printer:** It is an output device that produces physical copies of documents or images.
- **Speaker:** It is an output device that produces audio.

3. Storage Devices:

Storage devices are used to store data in the system which is required for performing any operation in the system. The storage device is one of the most required devices and also provides better compatibility. Example:

- **Hard Drive:** A hard drive is a storage device that stores data and files on a computer system.
- **USB Drive:** A USB drive is a small, portable storage device that connects to a computer system to provide additional storage space.
- **Memory Card:** A memory card is a small, portable storage device that is commonly used in digital cameras and smartphones.

- **External Hard Drive:** An external hard drive is a storage device that connects to a computer system to provide additional storage space.

4. Communication Devices:

Communication devices are hardware devices that enables data exchange between computer systems or networks. These include:

- **Modem:** A modem is a communication device that allows a computer system to connect to the internet.
- **Network Card:** A network card is a communication device that allows a computer system to connect to a network.
- **Router:** A router is a communication device that allows multiple devices to connect to a network.

Importance of Peripheral Devices

Peripheral devices are important for enhancing functionality of a computer. Here's why peripheral devices are so important:

- **Enhanced Functionality**: Peripheral devices expand a computer's capabilities, enabling it to perform various tasks.
- **User Interaction**: Input devices like keyboards and mice allow users to control and interact with the system.
- **Data Output**: Output devices such as monitors and printers display or present processed data.
- **Data Storage**: Storage devices ensure important data is saved and can be accessed or backed up when needed.
- **Communication**: Communication devices enable network connectivity, allowing the computer to communicate with other systems or networks.
- **Increased Efficiency**: Peripherals improve the overall efficiency and usability of the computer by adding specialized functions.

Peripheral Devices Connecting Options

Peripheral devices can connect to a computer through various methods. Each offers different speeds, ranges, and compatibility. Common connecting options include:

- **USB**: USB is common for keyboards, mice, printers, and external storage devices; supports both wired and wireless connections.
- **Bluetooth**: Bluetooth is wireless connection for devices like headphones, speakers, and mice.
- **Wi-Fi**: Wi-Fi is used for wireless networked devices like printers and cameras.
- **HDMI**: HDMI connects monitors, projectors, and TVs for high-definition video and audio.
- **Ethernet**: Wired connection for network communication, often for internet or LAN access.

- **Thunderbolt**: High-speed connection for external devices like storage drives and monitors.
- **VGA**: VGA is older connection for monitors or projectors, supports lower video resolutions.
- **DisplayPort**: Similar to HDMI, used for connecting high-definition monitors.

MOTHERBOARD

What Is a Motherboard?

A computer's motherboard is typically the largest printed circuit board in a machine's chassis. It distributes electricity and facilitates communication between and to the central processing unit (CPU), random access memory (RAM), and any other component of the computer's hardware. There is a broad range of motherboards, each of which is intended to be compatible with a specific model and size of the computer.

Since different kinds of processors and memories are intended to function best with certain types of motherboards, it is difficult to find a motherboard that is compatible with every type of CPU and memory. Hard drives, on the other hand, are generally compatible with a wide variety of motherboards and may be used with most brands and types.

Task 2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.

Hardware Requirements: Cabinet, Hard Disk, CD/DVD Drive, Floppy Drive, Monitor, Mouse, Keyboard,

Mother Board, Processor, Heat Sink Fan, RAM Cards, PCI Cards, AGP Card, CMOS Battery, IDE cables,

SMPS, ATX power Connector.

Software Requirements: Not Required

Safety Precautions:

1. Beware of electrostatic discharge (ESO)
2. Build computer on a hard surface, away from concepts.
3. Wear shoes and the short sleeved cotton wear.
4. Use Phillips, head screw driver.
5. Keep the components away from moisture.
6. Avoid using pressure while installing.

Steps for Assembling:

1. Setting the cabinet ready.
2. Preparing to fit the components.
3. Fitting the mother board.
4. Fitting the RAM, processor and cooler.
5. Installing PCI cards.
6. Fitting the hard disk and floppy drive.
7. Installing the CD ROM drives.
8. Connecting the ribbon cables.
9. Powering the drives and mother board.
10. Connecting the cables for the case front panel.
11. Final check.

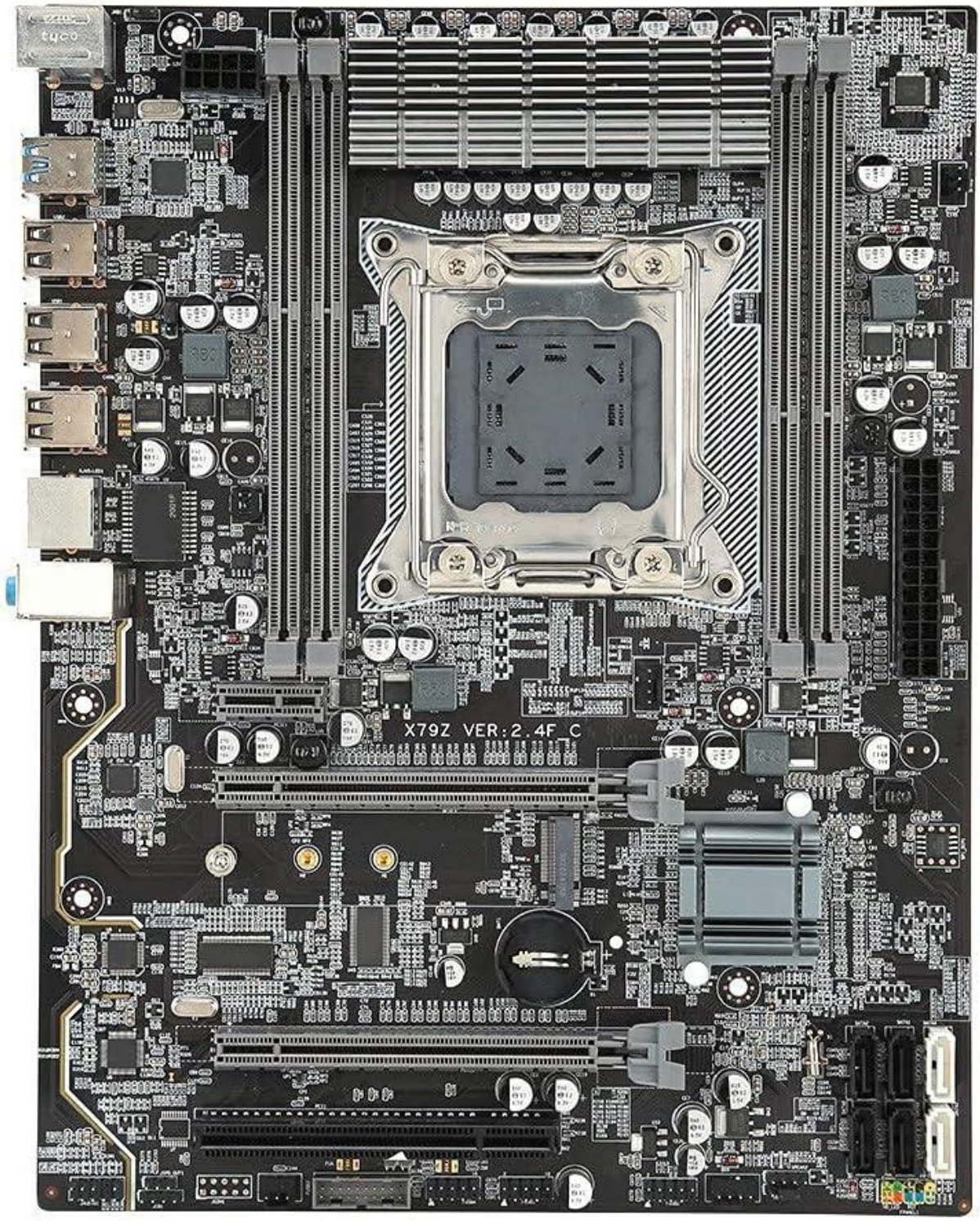
Getting the Cabinet ready:-

1. Check how to open the cabinet and determine where to fix the components.
2. Determine if the case has the appropriate risers installed.

Preparing to fit the Components:

1. Network adapter drive.
2. Floppy disk drive.
3. BUS cables.
4. Hard disk.
5. CD-ROM Drive.
6. RAM
7. CPU
8. Heat sink / cooler / fan.
9. Mother board.
10. Screws.

Fitting the Mother board:



1. Line up the patch on the motherboard with the appropriate holes in the block panel I/O shield of the case.

2. Check the points where you and to install

3. Install them and make the mother board sit on them and fix screws if required.

Fitting the processor:

1. Raise the small lever at the side of the socket.

2. Notice that there is a pin missing at one corner, determine the direction to fit in the processor.

3. You should not force the CPU. When inserting it. All pins should slide smoothly into the socket.

4. Lock the lever back down.

5. Install the heat sink over it (Different type for each processor). Heat sink / CPU fan.

Fitting the RAM:

1. The RAM must be suitable for motherboard.

2. There are currently 2 types of RAM available.

a) SD RAM.

b) DDR RAM.

3. The mother board's chipset determines which type of

RAM may be used.

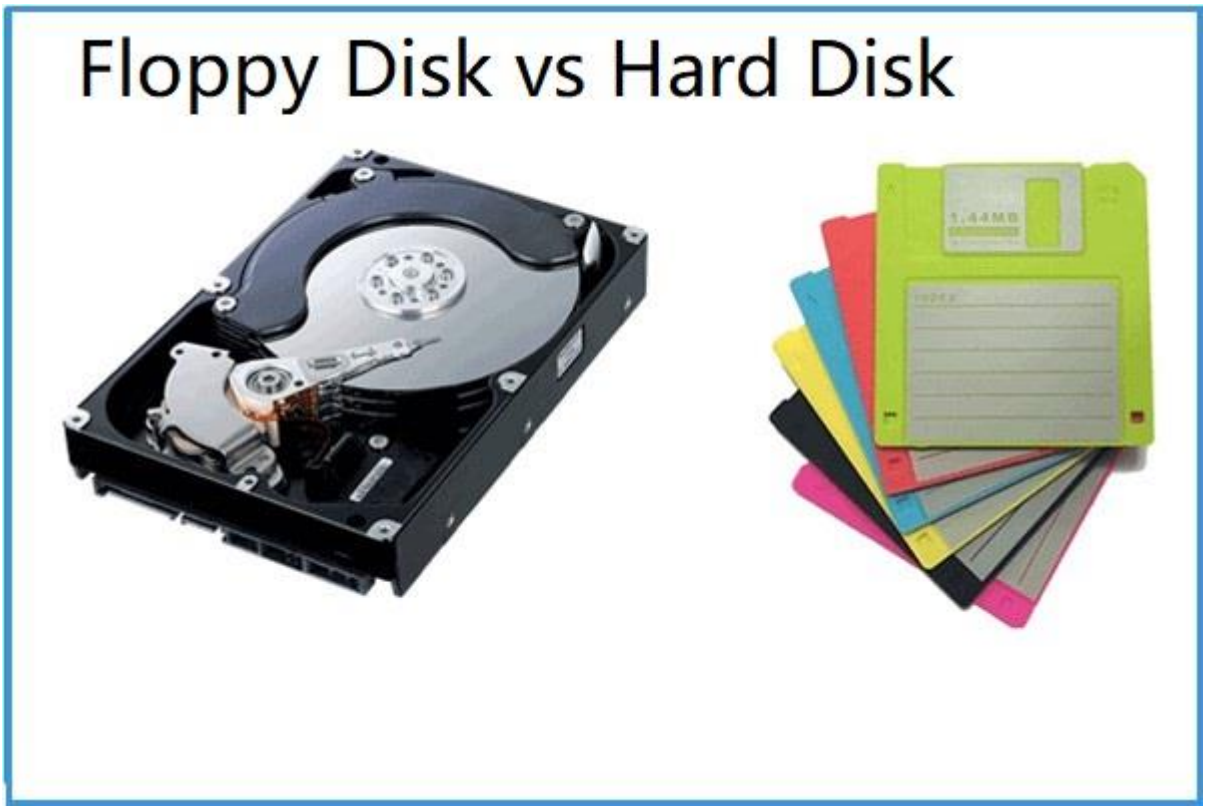
Installing the PCI Cards:

1. Most of the cards are inbuilt these days.

2. Network Interface Cards, Sound Cards etc. are fitted

into PCI slots.

Fitting the hard disk and Floppy disk:



1. Place the floppy and hard disks in their slots.

2. Leave some space above HDD to prevent heat building.

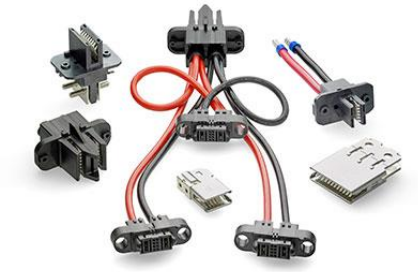
3. Check the jumper configuration.

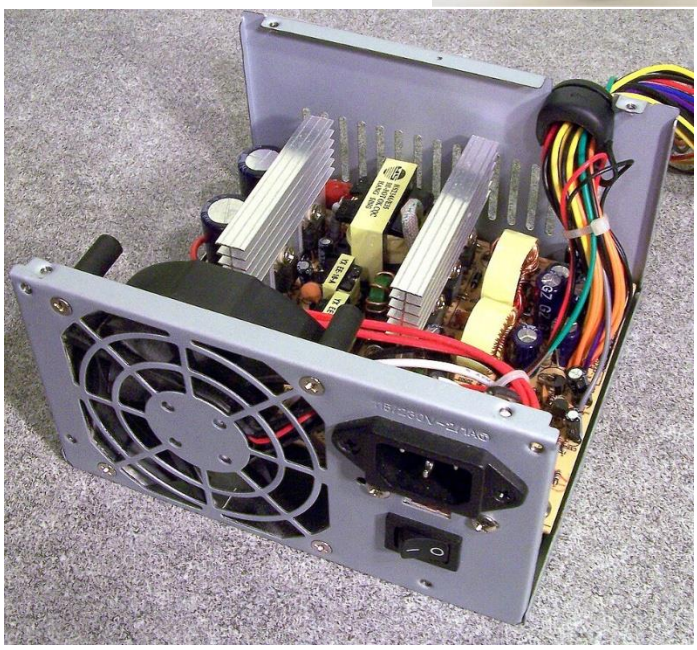
4. Fix the screws.

Installing the CD-ROM Drives:

1. CD-ROM drive is similar to installing a hard disk.
2. 1ST check that the jumper configuration is correct.
3. Fix the screw.

Connecting the BUS Cables, power connectors:-





1. Attach the long end of the cable to the IDEU connector on the motherboard first.
2. The red stripe on the IDE cable should be facing the CD Power.

Final Check:-

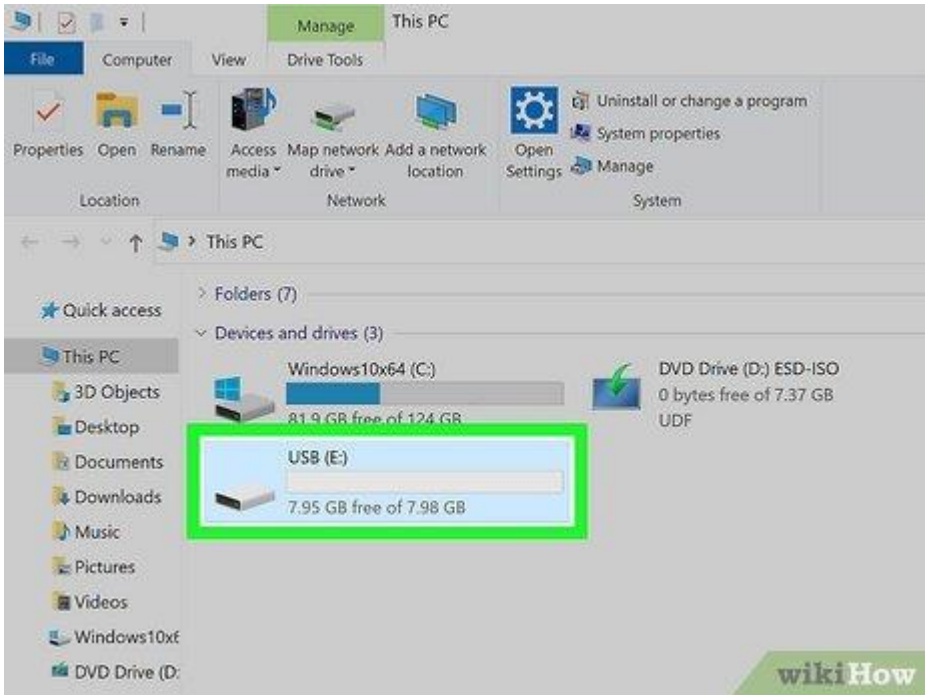
1. Mother board jumper configurations are the settings for the processor operator.
2. Drive jumper settings, master/ slave correct?
3. Is the processor, RAM modules and plug in cards finally seated in their sockets?
4. Did you plug all the cables in? Do they all fit really?
5. Have you frightened all the screws in plug- in cards or fitted the clips?
6. Are the drive secure?
7. Have u connected the power cables to all driver?

Result: Assembling and disassembling procedure is successfully completed.

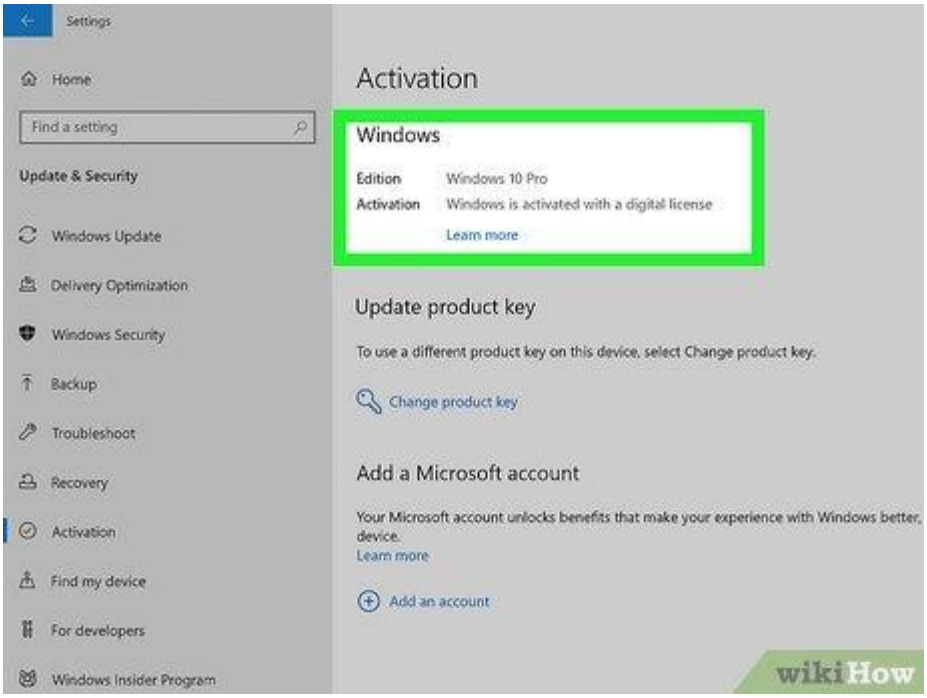
Task 3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

Part 1

Creating an Installation Disc or Drive



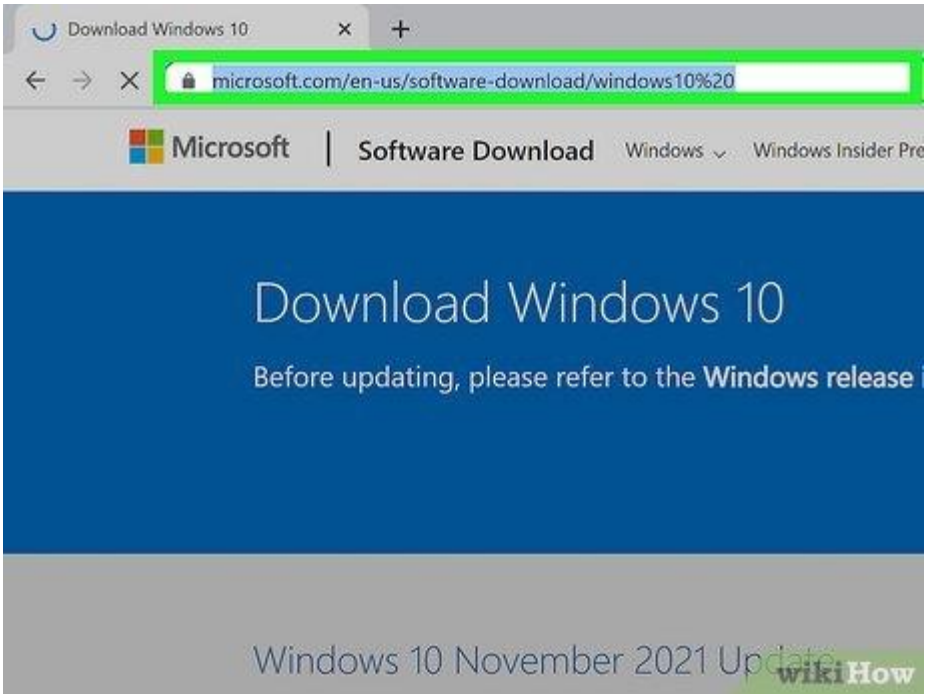
1. **Connect a blank USB flash drive or insert a blank writable DVD.** You can install Windows 10 by creating a bootable USB flash drive or DVD that contains the Windows 10 installation files. You'll need a USB flash drive that's at least 8GB, or any blank DVD to get started.[1]
    - If you already have Windows 10 installed on the PC and just want to reinstall it, it'll be easiest to reinstall it from within Windows 10 instead of creating installation media.
    - If you want to upgrade from Windows 7 or Windows 8.1, you won't need to create an installation disc or drive. However, you *will* need to follow most of this method to start the upgrade.

2. 

2

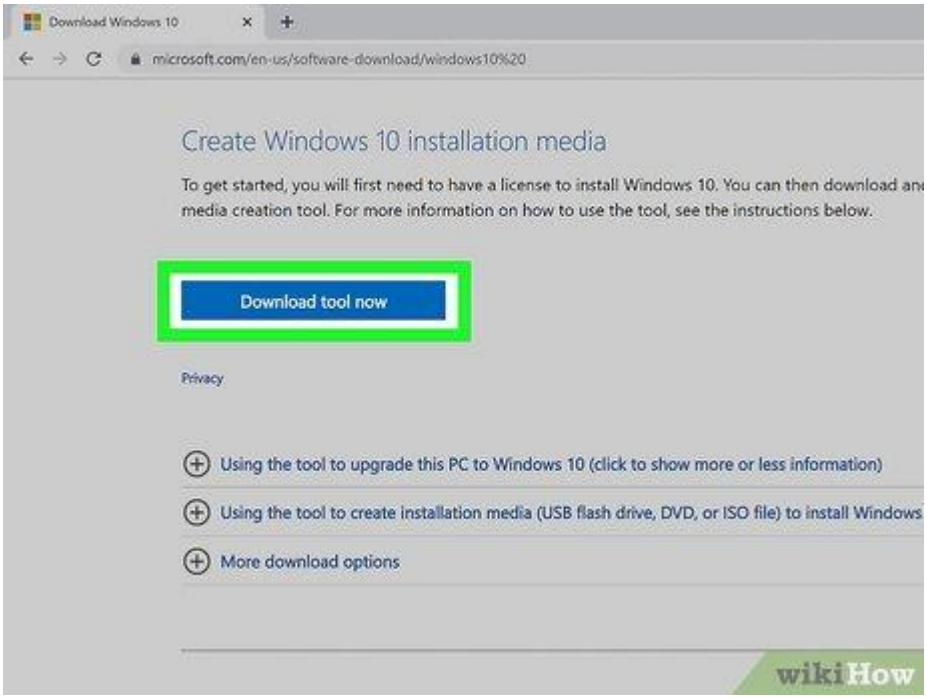
Make sure you have a product key. If you bought Windows 10 through Microsoft using your Microsoft account, your product key is already linked to your account. If you bought Windows 10 from another retailer, you'll have a 25-character product key that you'll need to have handy to activate Windows.[2]

- If you don't have a product key or you're installing Windows 10 on a new hard drive, make sure you've linked your Windows 10 digital license to your Microsoft account before you start the installation.[3] Head to **Settings** > **Update & Security** > **Activation** from the current installation—if the activation status says Windows is activated with a digital license, click **Add an account** and follow the on-screen instructions to link your Microsoft account.
- If you're upgrading from an earlier version and your PC qualifies for a free upgrade, you won't need a product key.

3. 

3

Go to https://www.microsoft.com/en-us/software-download/windows10. This is the official download site for Windows 10.

4. 
Download Windows 10
microsoft.com/en-us/software-download/windows10%20
Create Windows 10 installation media
To get started, you will first need to have a license to install Windows 10. You can then download an
media creation tool. For more information on how to use the tool, see the instructions below.
Download tool now
Privacy
Using the tool to upgrade this PC to Windows 10 (click to show more or less information)
Using the tool to create installation media (USB flash drive, DVD, or ISO file) to install Windows
More download options
wikiHow

4

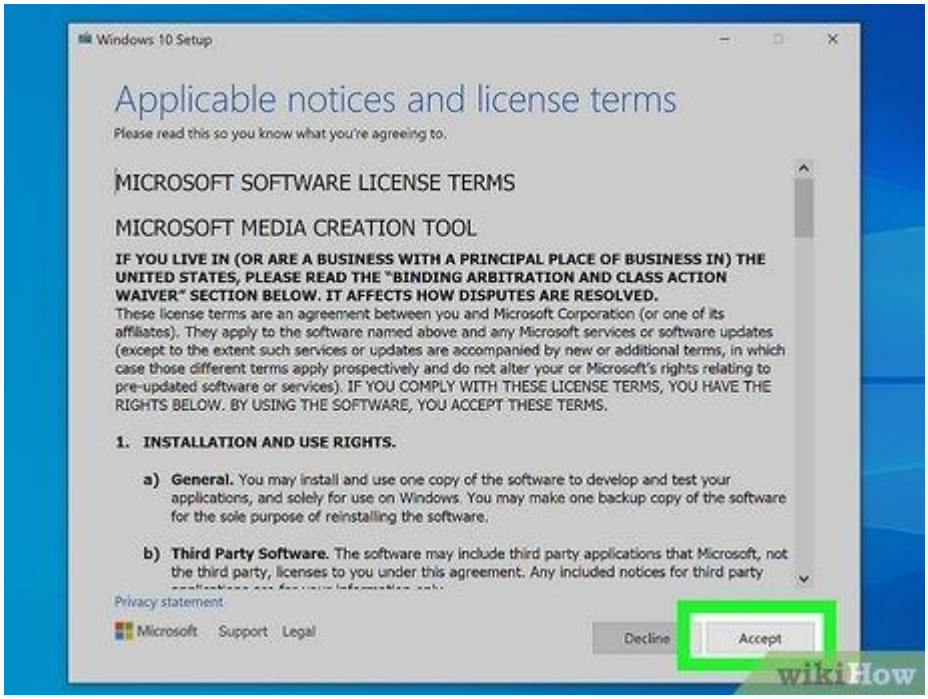
Click Download tool now. This is a blue button in the middle of the page. This downloads the Media Creation Tool, which you'll use to create your installation media (or start your upgrade).

5.

5

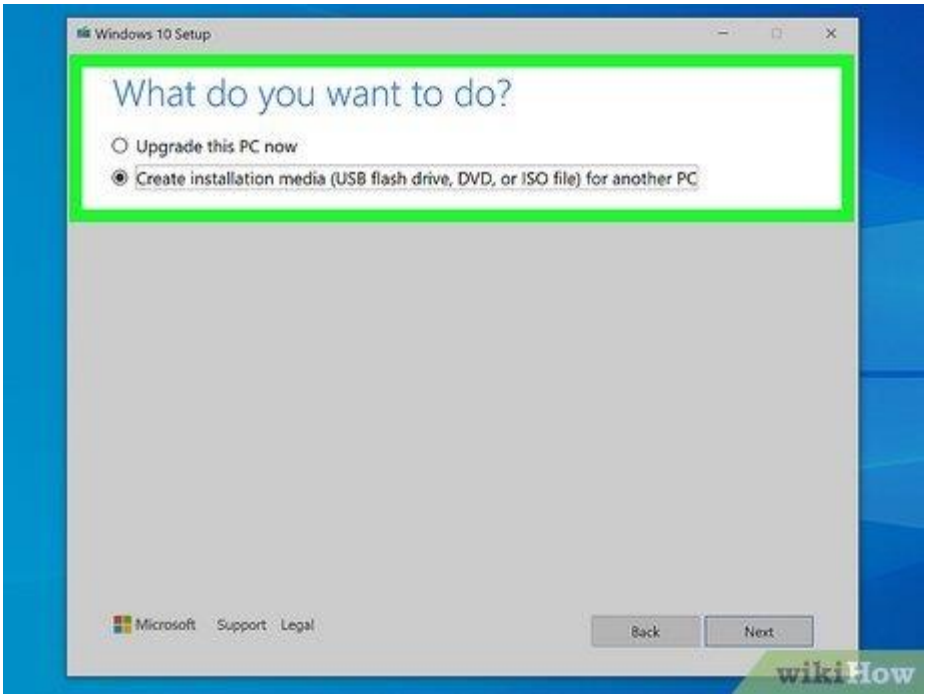
Double-click the downloaded file. Its name begins with "MediaCreationTool" and ends with ".exe." You'll find it in your default download folder, which is usually called Downloads.

- Click **Yes** when prompted to allow the installer to run.

6. 
Windows 10 Setup
Applicable notices and license terms
Please read this so you know what you're agreeing to.
MICROSOFT SOFTWARE LICENSE TERMS
MICROSOFT MEDIA CREATION TOOL
IF YOU LIVE IN (OR ARE A BUSINESS WITH A PRINCIPAL PLACE OF BUSINESS IN) THE UNITED STATES, PLEASE READ THE "BINDING ARBITRATION AND CLASS ACTION WAIVER" SECTION BELOW. IT AFFECTS HOW DISPUTES ARE RESOLVED.
These license terms are an agreement between you and Microsoft Corporation (or one of its affiliates). They apply to the software named above and any Microsoft services or software updates (except to the extent such services or updates are accompanied by new or additional terms, in which case those different terms apply prospectively and do not alter your or Microsoft's rights relating to pre-updated software or services). IF YOU COMPLY WITH THESE LICENSE TERMS, YOU HAVE THE RIGHTS BELOW. BY USING THE SOFTWARE, YOU ACCEPT THESE TERMS.
1. INSTALLATION AND USE RIGHTS.
a) General. You may install and use one copy of the software to develop and test your applications, and solely for use on Windows. You may make one backup copy of the software for the sole purpose of reinstalling the software.
b) Third Party Software. The software may include third party applications that Microsoft, not the third party, licenses to you under this agreement. Any included notices for third party
Privacy statement
Microsoft
Support
Legal
Decline
Accept
wikiHow

6

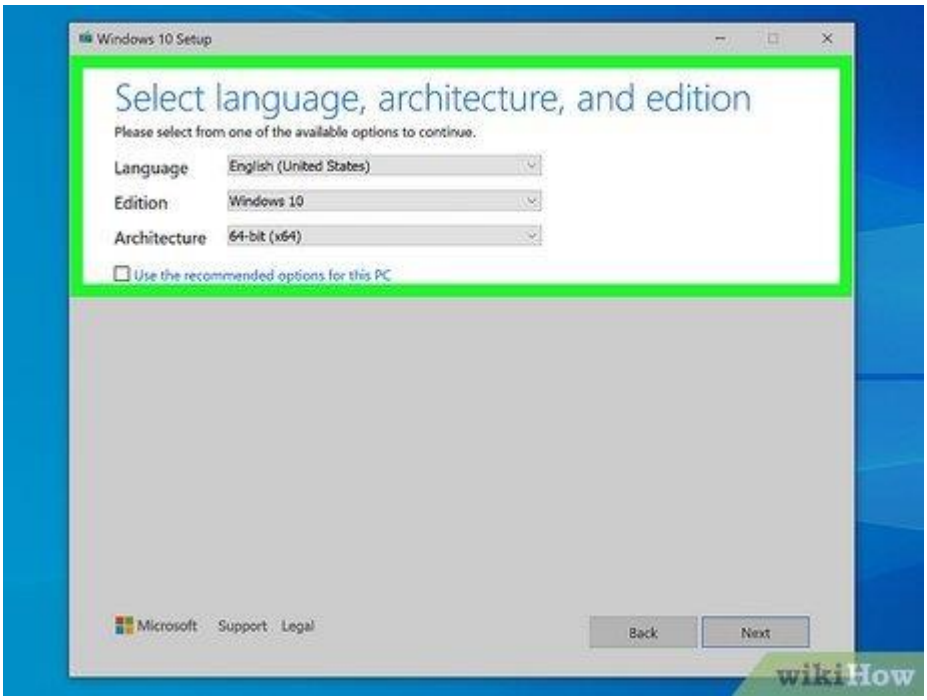
Click Accept to accept the license. It's in the bottom-right corner of the window.

7. 

7

Select "Create installation media" and click OK. This option lets you create a Windows installation disc or drive that will work on any compatible PC, not just the one you're using now.

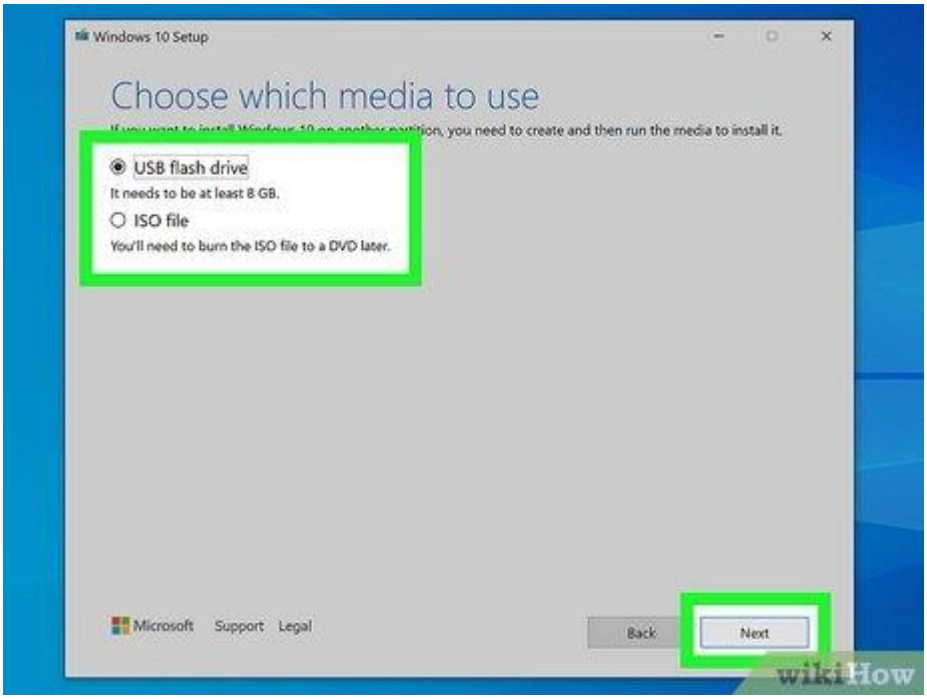
- If you're updating your PC from an earlier version of Windows, select **Upgrade this PC now** instead, and then follow the on-screen instructions to install Windows 10. You're done!

8. 

8

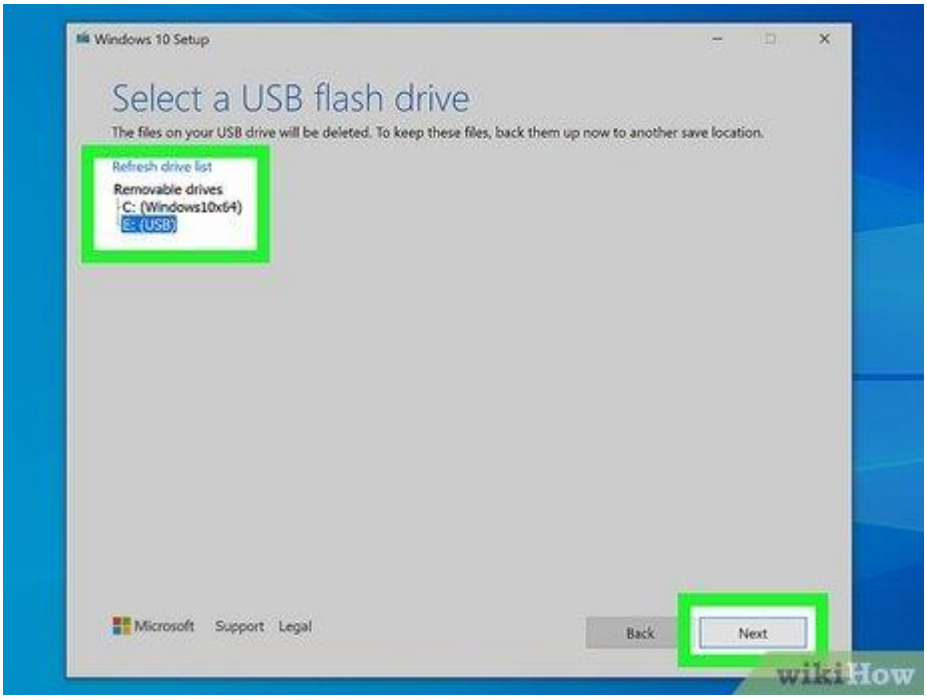
Select your preferences and click Next. If you're installing Windows on the current PC, you can keep the default options. If you need to install on a different PC, make sure you choose the language and edition for which you have a license, and select the architecture (64-bit or 32-bit) that matches the PC you're going to install on.

- If you're not sure about the architecture, you can choose **Both** from the menu.

9. 

9

Choose an installation type and click Next. An ISO file is a type of file that can be burned to a DVD, so choose that option if you plan to create a DVD. Otherwise, choose the USB flash drive option.

10. 

10

Create your installation media. The steps are a little different depending on what you're doing:[4]

- **Flash drive:** Select your flash drive from the list, click **Next**, and wait for the installation files to install. When the process is complete, click **Finish**.
- **DVD/ISO:** Click **Save** to save the ISO file to your computer—it may take a while because the file is large and has to be downloaded. Once downloaded, you'll see a progress screen that monitors the download. When the download is complete, click **Open DVD burner** on the "Burn the ISO file to a DVD" screen, select your DVD burner, and then click **Burn** to create your DVD.

Part 2
Booting from Windows 10 Installation Media

1. **Connect your Windows 10 installation media.** If you created a flash drive, connect it to the PC on which you want to install Windows 10. If you made a DVD, insert it into the drive now.

2.

2

Boot the PC into the BIOS. If your PC is not already set up to boot from your flash or optical drive, rebooting from your installation media won't work. You'll need to make a quick change in your BIOS to change the boot order. There are a few ways to get in:[5]

- **Windows 8.1 or 10:** From Windows, open **Settings**, select **Update & Recovery** or **Update & Security**, and go to **Recovery** > **Restart now** > **Troubleshoot** > **Advanced Options** > **UEFI Firmware Settings** > **Restart**.
- **Any PC:** Reboot the PC and immediately start pressing (over and over again) the keyboard key required by your PC to enter "Setup," or the BIOS. The key varies by computer, but here are some of the most common keys:
    - Acer and Asus: F2 or Del
    - Dell: F2 or F12
    - HP: ESC or F10
    - Lenovo: F1, F2, or Fn + F2
    - Lenovo ThinkPads: Enter + F1.
    - MSI: DEL
    - Microsoft Surface Tablets: Press and hold the volume-up button.
    - Samsung and Toshiba: F2
    - Sony: F1, F2, or F3

3.

3

Go to the Boot tab. You'll use the arrow keys to select it.

- The **Boot** tab may instead say **Boot Options** or **Boot Order**, depending on your computer's manufacturer.

4.

4

Select a device from which to boot. You have a couple of options here:

- For a **USB flash drive**, select the **Removable Devices** option.
- For a **disc installation**, select the **CD-ROM Drive** or **Optical Drive** option.

5.

5

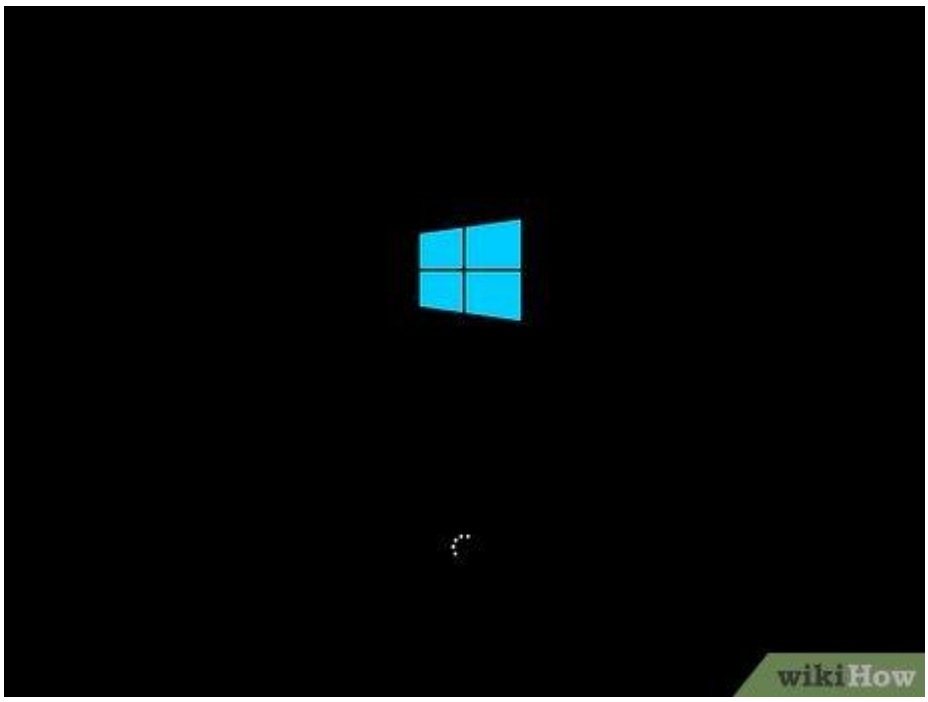
Press the + key until your boot option is first. Once either **Removable Devices** or **CD-ROM Drive** is at the top of the list, your computer will select your choice as its default boot option.

- On some computers, you'll instead press one of the function keys (e.g., **F5** or the arrow keys to navigate an option up to the top of the menu. The key will be listed on the right side of the screen.

6.

6

Save your settings. You should see a key prompt (e.g., **F10** at the bottom of the screen that correlates to "Save and Exit". Pressing it will save your settings and restart your computer.

7. 

7

Wait for your computer to restart. Once your computer finishes restarting, you'll see a window here with your geographical data. You're now ready to begin setting up your Windows 10 installation.

Part3

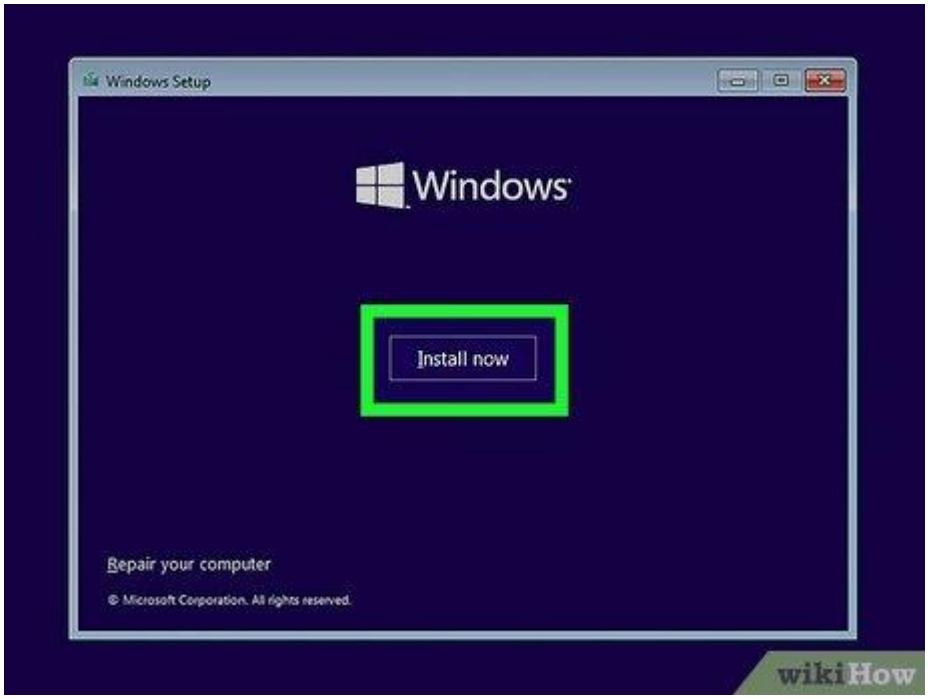
Installing Windows 10

Download Article

1.
Windows Setup
Windows
Language to install: English (United States)
Time and currency format: English (United States)
Keyboard or input method: US
Enter your language and other preferences and click "Next" to continue.
© Microsoft Corporation. All rights reserved.
Next
wikiHow

1

Click Next when prompted. You can also change the options on this page (e.g., the setup language) before continuing if need be.

2. 

2

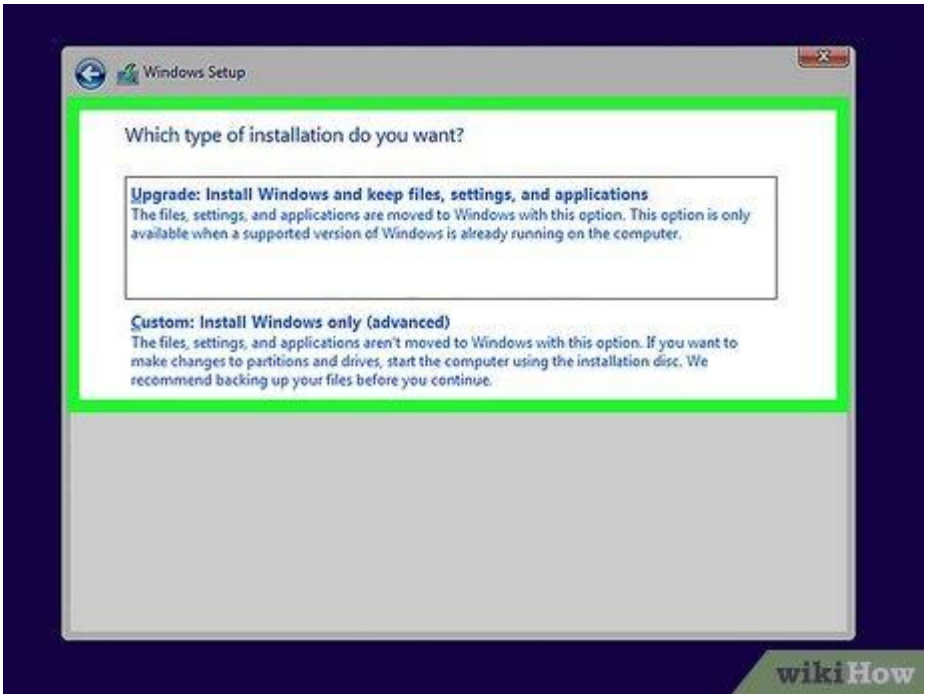
Click Install Now. It's in the middle of the window.

3.
Windows Setup
Activate Windows
If this is the first time you're installing Windows on this PC (or you're installing a different edition), you need to enter a valid Windows product key. Your product key should be in the confirmation email you received after buying a digital copy of Windows or on a label inside the box that Windows came in.
The product key looks like this: XXXXX-XXXXX-XXXXX-XXXXX-XXXXX
If you're reinstalling Windows, select I don't have a product key. Your copy of Windows will be automatically activated later.
Privacy statement
I don't have a product key
Next
wikiHow

3

Enter your Windows 10 key, then click Next. If you don't have a Windows 10 key, instead click **Skip** in the bottom-right corner of the screen.

- If you've already installed Windows 10 on this PC and were signed in with your Microsoft account, your key should be linked to your account. When prompted, just sign in with your Microsoft account and Windows will locate your key.[6]
- If you've changed hardware in the PC, such as replacing the motherboard, you can activate Windows after installing by going to **Settings** > **Update & Security** > **Activation** > **Troubleshoot** > **I changed hardware on this device recently**. Sign in with your Microsoft account when prompted, choose **This is the device I'm using right now**, and then click **Activate**.

4. 
Windows Setup
Which type of installation do you want?
Upgrade: Install Windows and keep files, settings, and applications
The files, settings, and applications are moved to Windows with this option. This option is only available when a supported version of Windows is already running on the computer.
Custom: Install Windows only (advanced)
The files, settings, and applications aren't moved to Windows with this option. If you want to make changes to partitions and drives, start the computer using the installation disc. We recommend backing up your files before you continue.
wikiHow

4

Follow the on-screen instructions to install Windows 10. You'll be asked to perform a few tasks, such as connecting to Wi-Fi and choosing some preferences. Once the installation is complete, you'll have a fresh new installation of Windows 10.[7]

- If you're upgrading from an earlier version of Windows, you'll be asked if you want to upgrade the current operating system or do a custom install. If you choose **Upgrade**, you'll preserve existing apps and files.

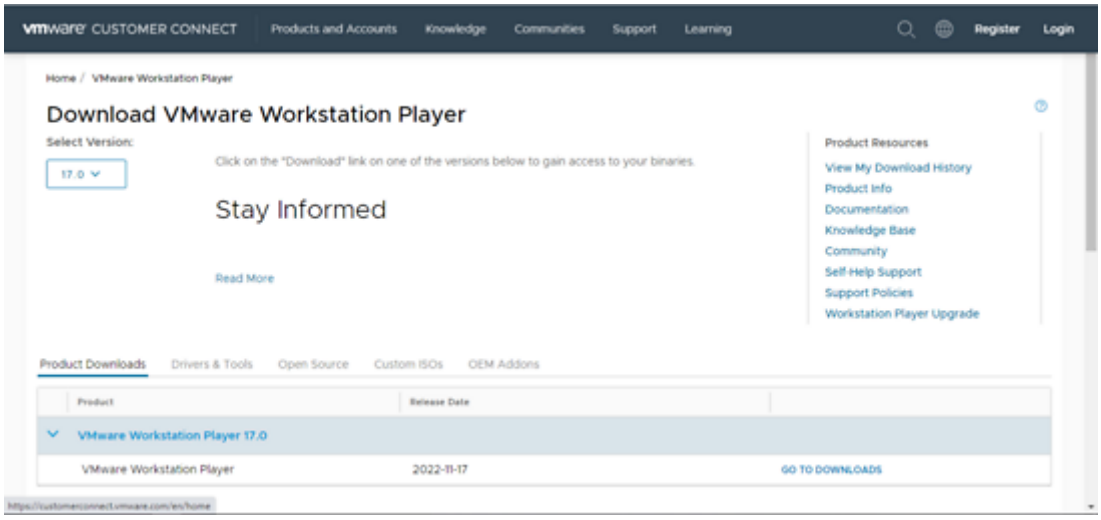
Task 4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot (VMWare) with both Windows and Linux. Lab instructors should verify the installation and follow it up with a Viva.

VMWare, a short form of "VirtualMachine Ware". A cloud computing company that develops virtualization software, management, and networking interfaces or tools. It provides hypervisor tools or products that help in running virtual machines, clusters, and containers. By using this software we can virtualize the computer with required computing resources and hardware customization on the actual computer (Physical computer). We need the VMware application and Ubuntu ISO file.

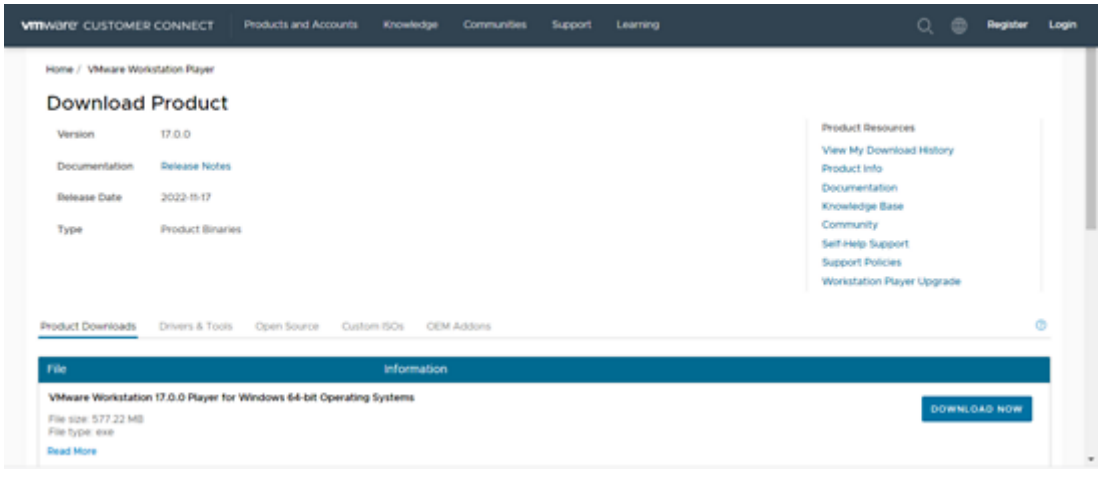
Installing VMware on Windows

Step 1: Click on the link provided below. Now select the version you want to download and click on "Go to downloads".

https://customerconnect.vmware.com/en/downloads/



Step 2: Now, Click on download now. (Check which OS you are selecting).



Step 3: Open the (.exe) file and install it.

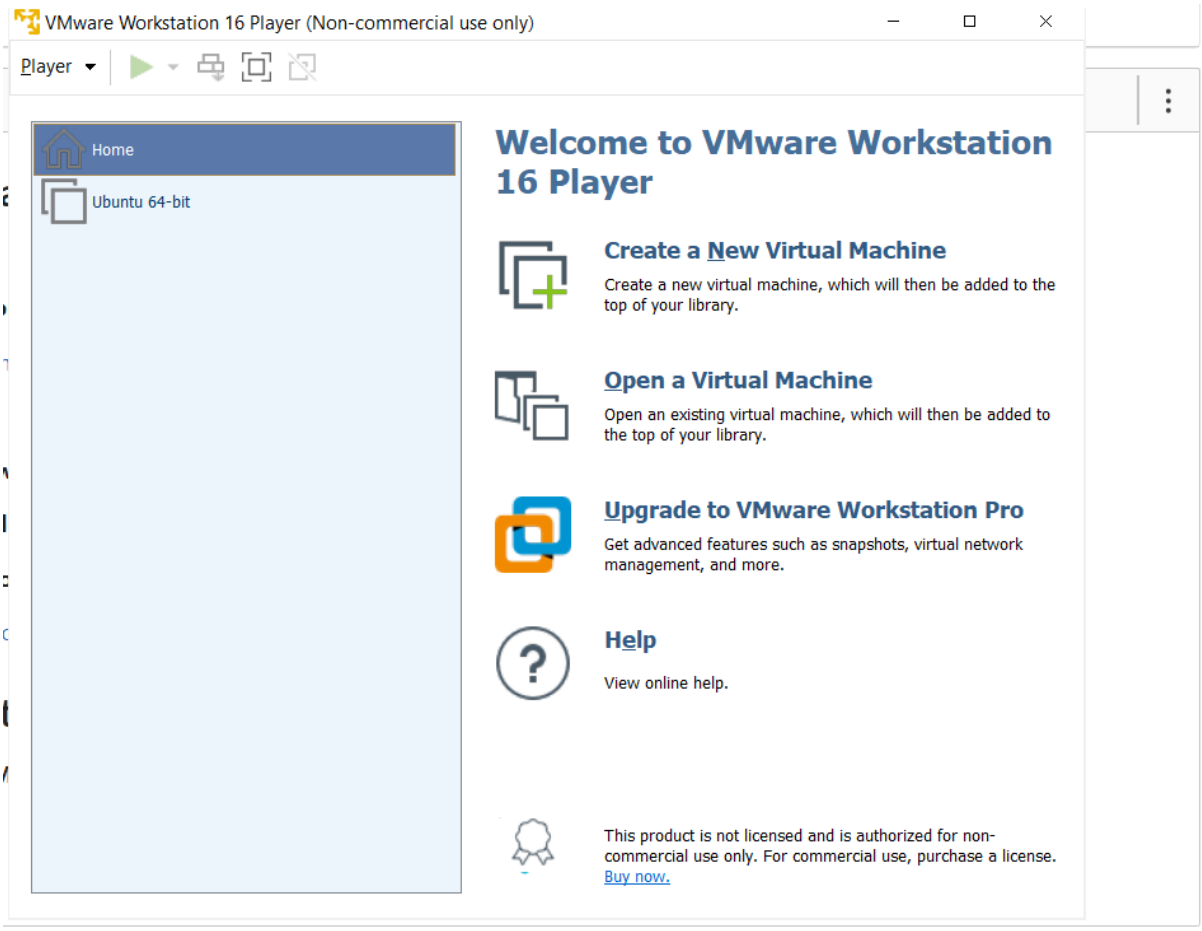
Step 4: Open the link below and download the Ubuntu ISO file.

https://ubuntu.com/download/desktop

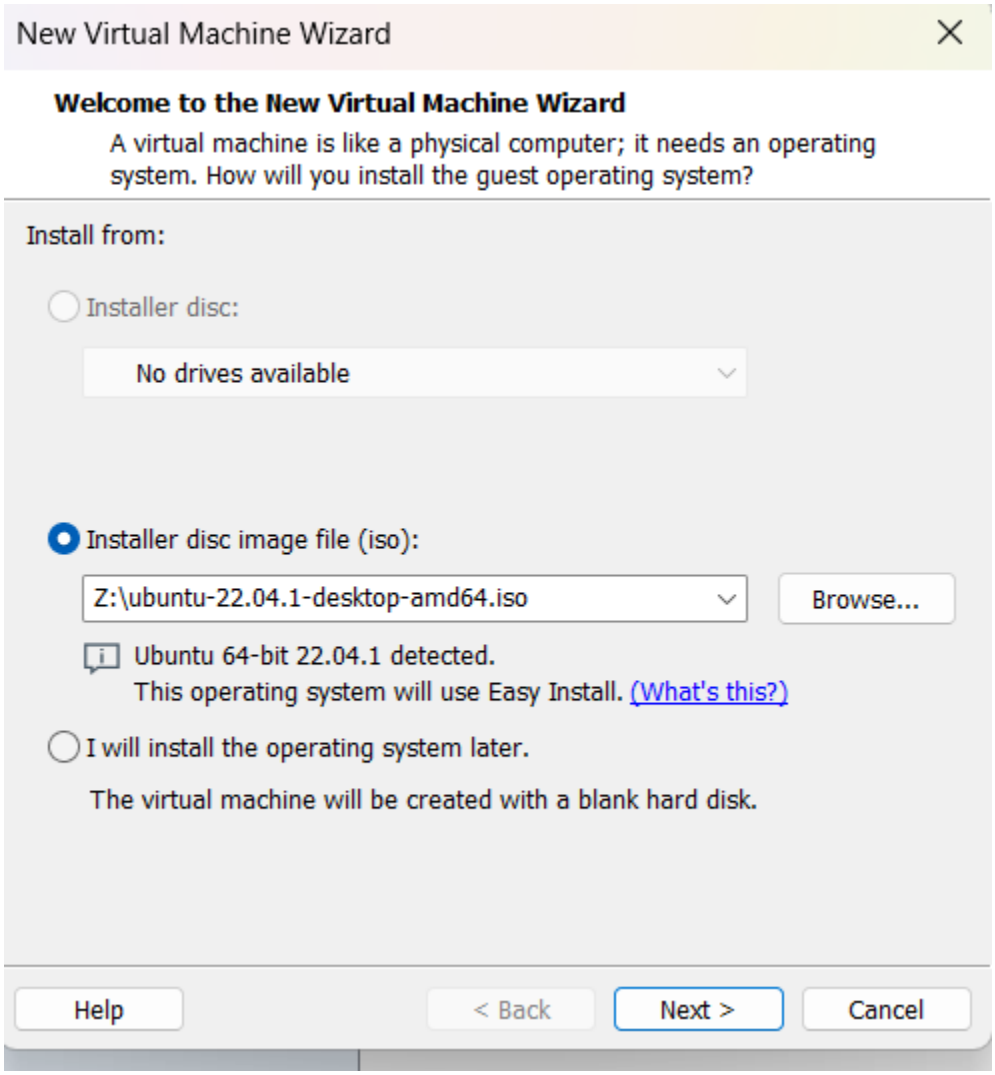
Download Ubuntu Desktop
The open-source desktop operating system that powers millions of PCs and laptops around the world. Find out more about Ubuntu's features and how we support developers and organisations below.
Ubuntu Desktop homepage
Visit the Ubuntu Desktop blog ›
Ubuntu 22.04.1 LTS
The latest LTS version of Ubuntu, for desktop PCs and laptops. LTS stands for long-term support — which means five years of free security and maintenance updates, guaranteed until April 2027.
Ubuntu 22.04 LTS release notes
Recommended system requirements:
2 GHz dual-core processor or better
4 GB system memory
Internet access is helpful
Either a DVD drive or a USB port for the
Download
For other versions of Ubuntu Desktop including torrents, the network installer, a list of local mirrors and

Installing Ubuntu in VMWare

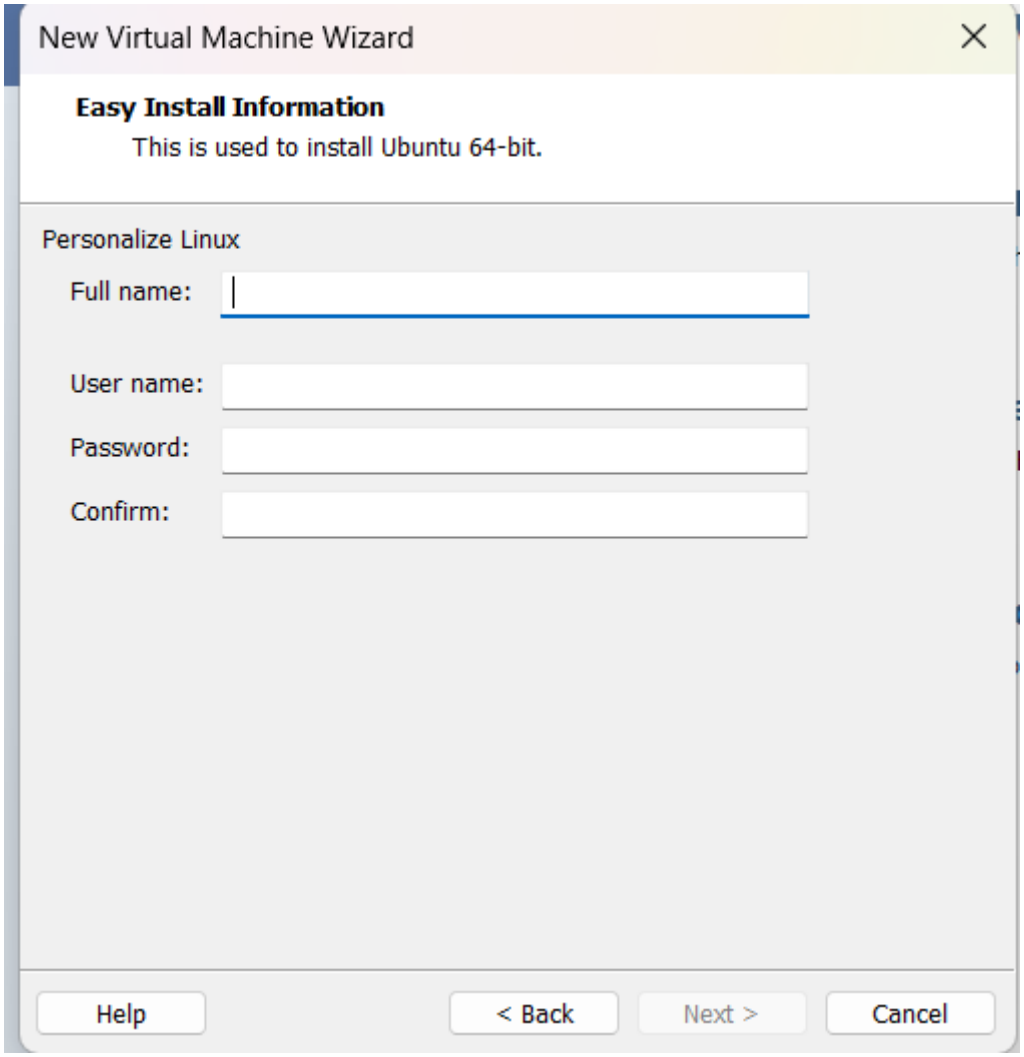
Step 5: Open the installed VMware application.


VMware Workstation 16 Player (Non-commercial use only)
Player
Home
Ubuntu 64-bit
Welcome to VMware Workstation 16 Player
Create a New Virtual Machine
Create a new virtual machine, which will then be added to the top of your library.
Open a Virtual Machine
Open an existing virtual machine, which will then be added to the top of your library.
Upgrade to VMware Workstation Pro
Get advanced features such as snapshots, virtual network management, and more.
Help
View online help.
This product is not licensed and is authorized for non-commercial use only. For commercial use, purchase a license.
Buy now.

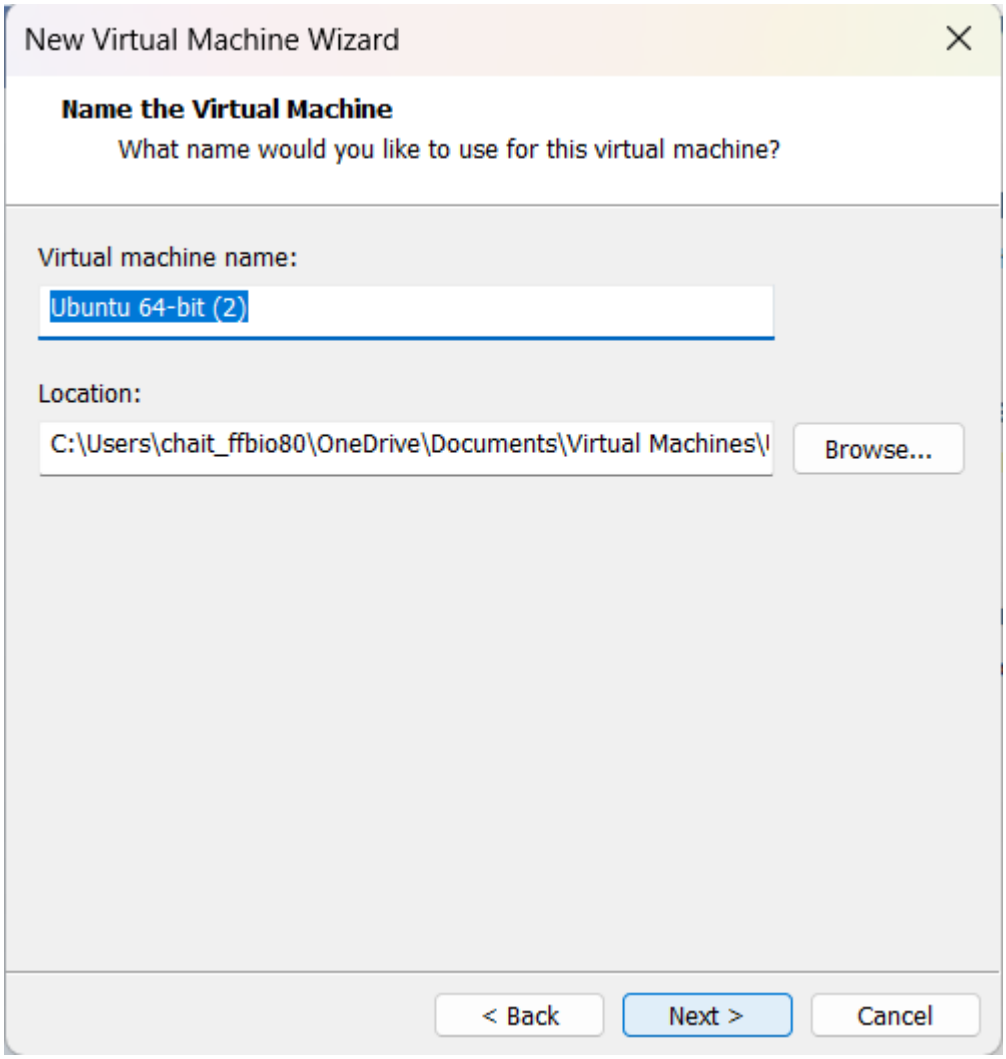
Step 6: Click on "Create new virtual machine". Browse the ISO file that has been downloaded and select it.


New Virtual Machine Wizard
Welcome to the New Virtual Machine Wizard
A virtual machine is like a physical computer; it needs an operating system. How will you install the guest operating system?
Install from:
Installer disc:
No drives available
Installer disc image file (iso):
Z:\ubuntu-22.04.1-desktop-amd64.iso
Browse...
Ubuntu 64-bit 22.04.1 detected.
This operating system will use Easy Install. (What's this?)
I will install the operating system later.
The virtual machine will be created with a blank hard disk.
Help
< Back
Next >
Cancel

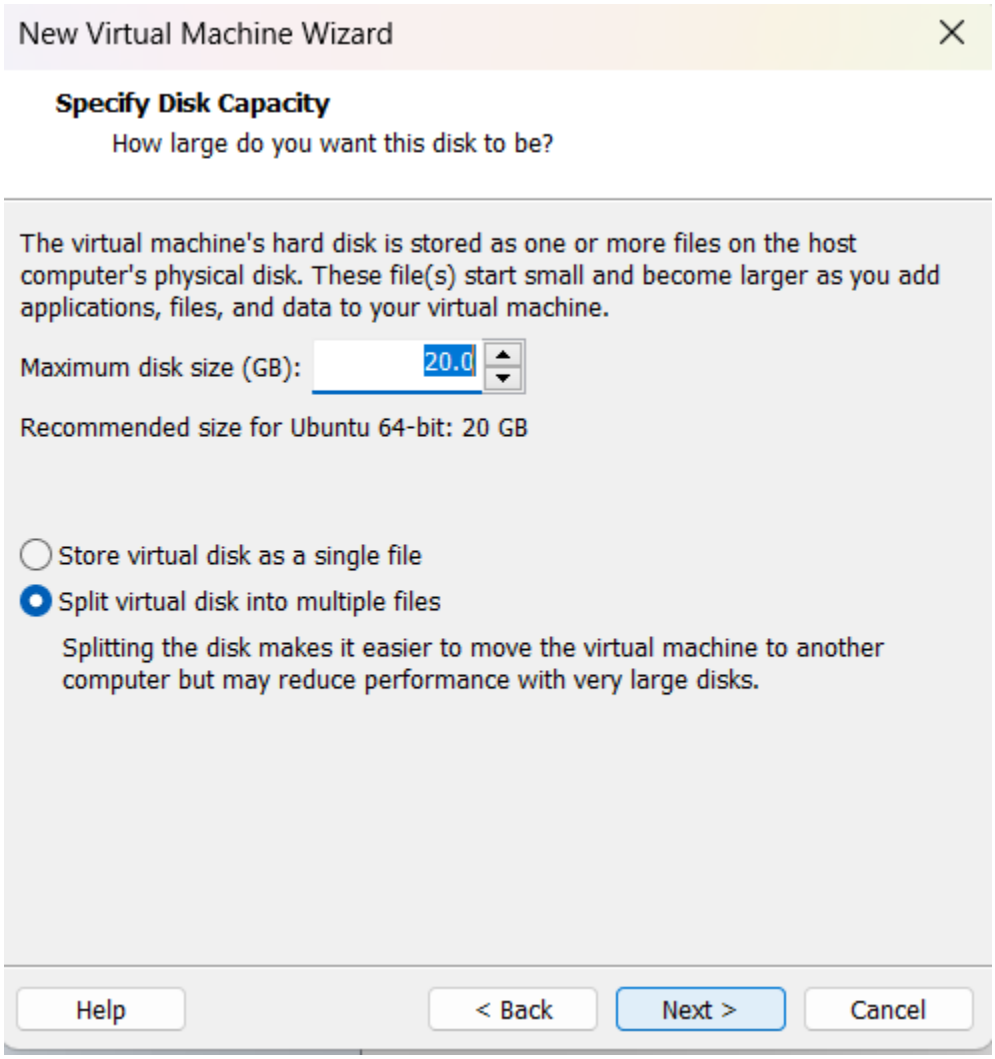
Step 7: Enter all the details >> click on next. Personalization of Virtual Machine.



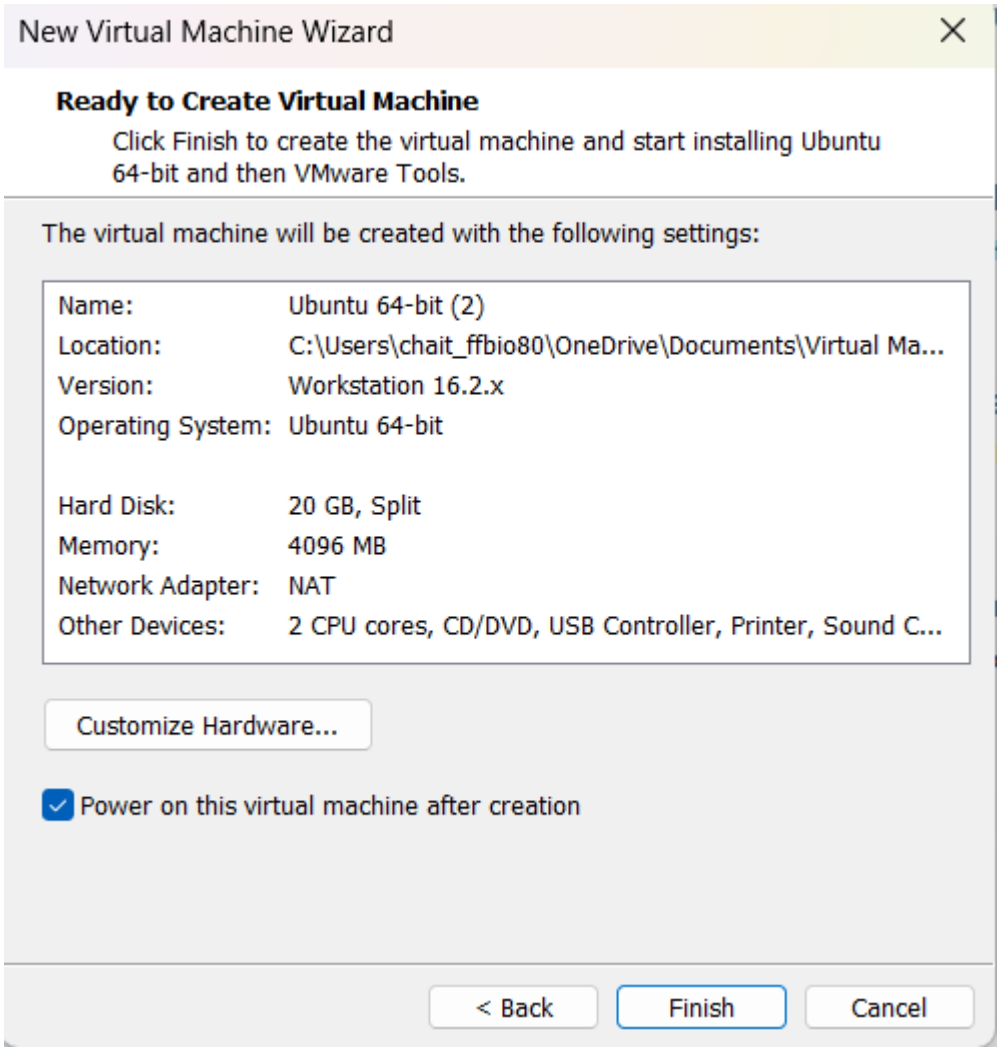
Step 8: Enter Virtual machine name >> click on next.



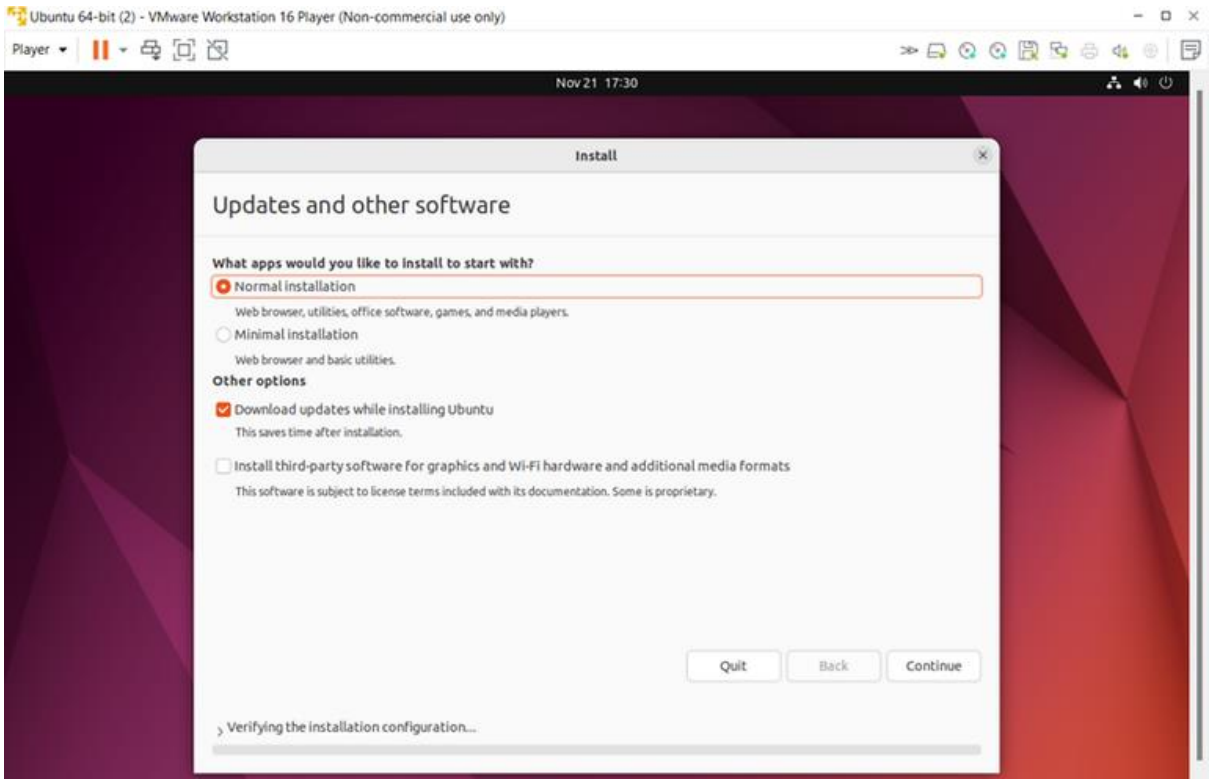
Step 9: Specify disk capacity >> click on next.


New Virtual Machine Wizard
Specify Disk Capacity
How large do you want this disk to be?
The virtual machine's hard disk is stored as one or more files on the host computer's physical disk. These file(s) start small and become larger as you add applications, files, and data to your virtual machine.
Maximum disk size (GB):
20.0
Recommended size for Ubuntu 64-bit: 20 GB
Store virtual disk as a single file
Split virtual disk into multiple files
Splitting the disk makes it easier to move the virtual machine to another computer but may reduce performance with very large disks.
Help
< Back
Next >
Cancel

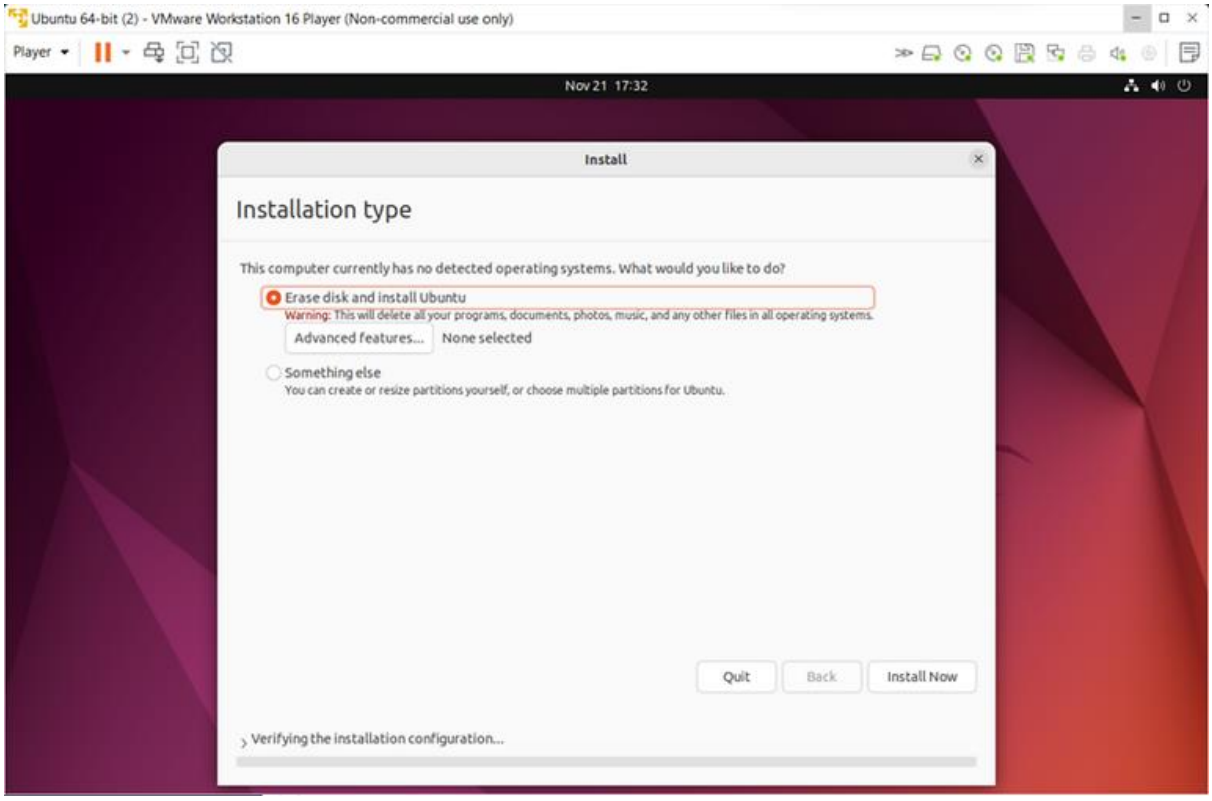
Step 10: If needed customize the hardware and click on finish.


New Virtual Machine Wizard
Ready to Create Virtual Machine
Click Finish to create the virtual machine and start installing Ubuntu 64-bit and then VMware Tools.
The virtual machine will be created with the following settings:
Name: Ubuntu 64-bit (2)
Location: C:\Users\chait_ffbio80\OneDrive\Documents\Virtual Ma...
Version: Workstation 16.2.x
Operating System: Ubuntu 64-bit
Hard Disk: 20 GB, Split
Memory: 4096 MB
Network Adapter: NAT
Other Devices: 2 CPU cores, CD/DVD, USB Controller, Printer, Sound C...
Customize Hardware...
Power on this virtual machine after creation
< Back
Finish
Cancel

Step 11: Ubuntu has been successfully installed in VMWare. Now open VMware and click on ubuntu-64 which appears on the left panel. (If not directly opened). Select the language and click on next. Select the Normal or Minimal installation based on your requirements.


Ubuntu 64-bit (2) - VMware Workstation 16 Player (Non-commercial use only)
Player
Nov 21 17:30
Install
Updates and other software
What apps would you like to install to start with?
Normal installation
Web browser, utilities, office software, games, and media players.
Minimal installation
Web browser and basic utilities.
Other options
Download updates while installing Ubuntu
This saves time after installation.
Install third-party software for graphics and Wi-Fi hardware and additional media formats
This software is subject to license terms included with its documentation. Some is proprietary.
Quit
Back
Continue
Verifying the installation configuration...

Step 12: Select Installation type >> Erase disk and install Ubuntu (This will not delete your windows data) >> Click on install now.


Ubuntu 64-bit (2) - VMware Workstation 16 Player (Non-commercial use only)
Player
Nov 21 17:32
Install
Installation type
This computer currently has no detected operating systems. What would you like to do?
Erase disk and install Ubuntu
Warning: This will delete all your programs, documents, photos, music, and any other files in all operating systems.
Advanced features...
None selected
Something else
You can create or resize partitions yourself, or choose multiple partitions for Ubuntu.
Quit
Back
Install Now
Verifying the installation configuration...

Task 5: Every student should install BOSS on the computer. The system should be configured as dual boot (VMWare) with both Windows and BOSS. Lab instructors should verify the installation and follow it up with a Viva.

Set up your BOSS environment

Step 1: Define your local install folder

In this part of the tutorial, we will do two things: (1) setup the necessary references to BOSS and (2) preparing your workarea folder. You will be developing your own BOSS packages (mainly code for event selection) in this workarea folder. Next to your workarea, there will be a CMT folder (cmthome), which manages access to the BOSS installation. In the end you will have a file structure like this:

- /besfs5/users/$USER/boss/ (local install area)
    - cmthome (manages access to BOSS)
    - workarea (contains your analysis code)
        - MyEventSelectionPackage (could be several packages)
        - TestRelease (loads and checks essential BOSS packages)
        - InstallArea (binaries and header files are collected here after compiling)

For the sake of making this tutorial work in a general setting, we will first define a bash variable here (you can just execute this command in bash):

BOSS_INSTALL="/besfs5/users/${USER}/boss"

Click to show

This variable points to the path that will contain your local 'install' of BOSS. You can change what is between the quotation marks by whatever folder you prefer, in case you want your local BOSS install to be placed in some other path, for instance by /ihepbatch/bes/$USER.

At this stage, you'll have to decide which version of BOSS you have to use. At the time of writing, **version 7.0.5** is the latest stable version, though it could be that for your analysis you have to use data sets that were reconstructed with older versions of BOSS. Here, we'll stick with 7.0.5, but you can replace this number with whatever version you need.

For convenience, we'll again define the version number as a variable here.

BOSS_VERSION="7.0.5"

Tip

An overview of all BOSS versions and their release notes can be found here (requires login).

Step 2: Import environment scripts

We first have to obtain some scripts that allow you to set up references to BOSS. This is done by copying the cmthome folder from the BOSS Software directory (which contains all source code for BOSS) to your local install area

Option -p makes mkdir work on arbitrary depth and ignores existing directories

mkdir -p "$BOSS_INSTALL/cmthome"

cd "$BOSS_INSTALL/cmthome"

cp -Rf /cvmfs/bes3.ihep.ac.cn/bes3sw/cmthome/cmthome-$BOSS_VERSION/* .

Note that we have omitted the version from the original folder name. You can choose to keep that number as well, but here we chose to use the convention
that cmthome and workarea without a version number refers to the latest stable version of BOSS.

Step 3: Modify requirements

In cmthome*, you now have to modify a file called requirements, so that it handles your username properly. We'll use the vi editor here, but you can use whatever editor you prefer:

vi requirements

The file contains the following lines:

macro WorkArea "/ihepbatch/bes/maqm/workarea"

path_remove CMTPATH "${WorkArea}"

path_prepend CMTPATH "${WorkArea}"

The first line needs to be modified so that the variable ${WorkArea} points to your quotation marks with the path to your workarea. In our case, the first line becomes:

macro WorkArea "/besfs5/users/$USER/boss/workarea"

What is this requirements file actually?

Step 4: Set references to BOSS

Now you can use the scripts in cmthome to set all references to BOSS at once, using:

source setupCMT.sh # starts connection to the CMT

cmt config # initiates configuration

source setup.sh # sets path variables

Just to be sure, you can check whether the path variables have been set correctly:

echo $CMTPATH

If everything went well, it should print something like:

/besfs5/users/$USER/boss/workarea:

/cvmfs/bes3.ihep.ac.cn/bes3sw/Boss/7.0.5:

/cvmfs/bes3.ihep.ac.cn/bes3sw/ExternalLib/SLC6/ExternalLib/gaudi/GAUDI_v23r9:

/cvmfs/bes3.ihep.ac.cn/bes3sw/ExternalLib/SLC6/ExternalLib/LCGCMT/LCGCMT_65a

The paths listed here (separated by : columns) will be used to look for packages required by the requirements files of packages (see Set up a BOSS package). The first of these paths

points to your workarea, the second to the BOSS version you use (also called $BesArea), and the rest point to external libraries such as Gaudi.

Step 5: Create a workarea sub-folder

As mentioned in Set up the BOSS environment, the local install area contains a workarea folder next to the cmthome folder we have been using so far. In our case, it will be:

mkdir -p "${BOSS_INSTALL}/workarea"

We'll get back to the workarea folder when we Set up a BOSS package.

Step 6: Implement the TestRelease package

BOSS is built up of a large number of packages, such as VertexFit. Your local account needs to load the essential ones in order for you to be able to run the boss.exe executable. For this, all versions of BOSS come with the TestRelease package. This package helps you to load those essential packages.

Copy the latest TestRelease package from the $BesArea (where the source code of the BOSS version you chose is located) to your workarea:

cd $BOSS_INSTALL/workarea

cp -Rf $BesArea/TestRelease .

Then move into the cmt folder that comes with it and source scripts in there:

cd TestRelease/TestRelease-*/cmt

cmt broadcast # load all packages to which TestRelease refers

cmt config # perform setup and cleanup scripts

cmt broadcast make # build executables

source setup.sh # set bash variables

Step 7: Test BOSS using boss.exe

To test whether everything went correctly, you can try to run BOSS:

boss.exe

It should result in a (trivial) error message like this:

BOSS version: 7.0.5

********** BESIII Collaboration **********

the jobOptions file is: jobOptions.txt

ERROR! the jobOptions file is empty!

If not, something went wrong and you should carefully recheck what you did in the above steps.

Step 8: Modify your .bashrc

In order to have the references to BOSS loaded automatically every time you log in on the server, we can add some of the steps we did above to your bash profile (.bash_profile) and *run commands* file (.bashrc).

On a *login terminal*, the .bash_profile script is loaded every time you log in, while a *local terminal* (like Ubuntu on your own pc) loads .bashrc (run commands). Here, we therefore just 'forward' the loading of .bash_profile to .bash_rc.

First, add the following lines to your bash profile (use vi ~/.bash_profile):

.bash_profile

```
if [[ -f ~/.bashrc ]]; then
  source ~/.bashrc
fi
```

These lines force the server to source your .bashrc run commands file when you log in. In that file, you should add the following lines:

.bashrc

```
export BOSS_INSTALL="/besfs5/users/${USER}/boss"
export BOSS_VERSION="7.0.5"
CMTHOME="/cvmfs/bes3.ihep.ac.cn/bes3sw/cmthome/cmthome-${BOSS_VERSION}"

source "${BOSS_INSTALL}/cmthome/setupCMT.sh"
source "${BOSS_INSTALL}/cmthome/setup.sh"
source "${BOSS_INSTALL}/workarea/TestRelease/TestRelease-"*"/cmt/setup.sh"
export PATH=$PATH:/afs/ihep.ac.cn/soft/common/sysgroup/hep_job/bin/
```

Notice that the commands we used the previous steps appear here again. The last line allows you to submit BOSS jobs to the 'queue' (using the hep_sub command) — for now, don't worry what this means.

To reload the run commands, either just log in again or use source ~/.bashrc.

Internet & World Wide Web

Task1: Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

Software Requirement: Local Area Network to access the

Internet Hardware Requirement: Personal computer THEORY:

The internet is a worldwide, publicly network of interconnected computer

networks

LOCAL AREA NETWORK:

LANs are privately owned networks within a single building or campus of up to

few kilometers in size.

WIDE AREA NETWORK:

A WAN is a network that connects computers across a large geographic area

such as a city or country

TCP/IP (Transmission Control Protocol/Internet Protocol):

Collection of methods used to connect servers on the internet and to exchange

data.

HTML (Hyper Text Markup Language):

The coding used to control the look of documents on the web

HTTP (Hyper Text Transfer Protocol):

Part of a url that identifies the location as one that uses HTML

IP (Internet Protocol):

A format for contents and addresses of packets of information sent over

the internet

IP ADDRESS:

An identifier for a computer or device on a TCP/IP network

SEARCH ENGINE:

A program that searches documents located on the Internet for keywords or

phrases entered by a person browsing the net.

Internet Connection requirements:

TCP/IP protocol

Client Software

ISP Account

Means of communication to the net:

telephone Modem

Ethernet

ISDN(Integrated Services Digital Network)

DSL(Digital Subscriber Line)

Satellite.

PROCEDURE:

1. Go to start>control Panel

2. open Network Connections

3. Click create a new connection and then click next

4. The new connection wizard window opens , click next

to continue

5. Choose one of the options in the next dialog box

6. Choose one of the three options in the next dialog box

If you do not have an internet account click choose from a list of ISPs and

then click next

□ If you have an account click Set up my connection manually

□ If you have a CD from the ISP click use the CD I got from an ISP and then

click next

7. Follow the next steps as per the option you selected.

TEST DATA: No Test data for this Experiment

ERROR: No Errors for this Experiment

RESULT: In this way we can learn surfing the web

Task 2: Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.

Software Requirement: Local Area Network to access the Internet

Hardware Requirement: Personal computer

THEORY:

Web browser provides the means to the searching and also helps to

Download the web content.

Web browsers support most of the famous Internet Protocols like HTTP,

FTP.

Common file formats a browser accepts are HTML

Well known browsers natively support a variety of other formats in

addition to HTML such as JPEG,PNG,GIF image formats

Different web browsers available in the market are:

- Silversmith
- Mosaic
- Netscape
- Mozilla
- Opera
- Lynx
- Safari

Bookmark:

Each web browser is built-in with the support of Internet Bookmarks which serve as

a named anchor – primarily to URLs. The primary purpose of this book mark is to easily catalog and access web pages that the web browser user has visited or

plans to visit, without having to navigate the web to get there.

Pop-up Blockers:

Pop-ups are a form of online advertising on the WWW intended to attract the

attention of the users. These pop ups are hosted on the web sites which are

frequently visited by the netizens. These pop ups are activated when these web

sites open a new web browser window and there by displaying the advertisements.

Plug-ins:

A plug-in is a software component program that interacts with a main application to provide a better integration of the media. The basic difference between application programs and plug-ins is that multimedia files are launched in a separate window where as in plug-ins multimedia play in the browser window.

Few famous plug -ins are:

Apple Quick Time

Macromedia flash

Microsoft Media Player

Adobe Shockwave

Sun Microsystems Java Applet

PROCEDURE: LAN

Proxy Settings:

select tools menu in Internet Explorer

Select Internet Options

Select Connections

You end up in two options

Dial-up and virtual network settings

LAN setting

The selection at this step is dependent on the kind of connection you are trying to configure. They are:

Dial-up modem connection

LAN connection

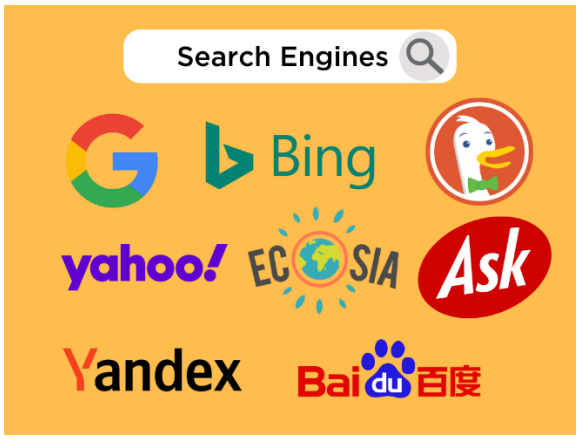
DSL or Cable modem

TEST DATA: No Test data for this Experiment

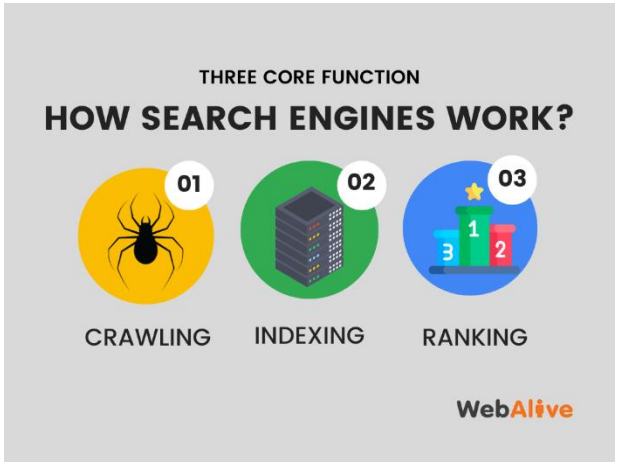
ERROR: No Errors for this Experiment

RESULT: In this way we can learn surfing the web.

Task 3: Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.



A search engine is a software system that helps users find information on the internet by searching through a vast database of web pages and other online resources. Essentially, it's a tool that allows users to query the web using keywords or phrases and then presents a list of relevant results.



Here's a more detailed explanation:

How it works:

1. **1. Crawling and Indexing:**

Search engines use automated programs called "crawlers" or "bots" that constantly explore the web, following links from page to page to discover new content. These bots gather information about the content of each page, including text, images, and links. This information is then stored in a massive index, which acts like a catalog of the internet.

2. **2. Query Processing:**

When a user enters a search query (a keyword or phrase), the search engine compares the query against its index.

3. **3. Ranking Results:**

The search engine then ranks the pages in the index based on their relevance to the search query. Factors like the presence of keywords, the quality of the website, and the number of other sites linking to it influence the ranking.

4. **4. Presenting Results:**

The search engine then presents the ranked results to the user, typically in a list of web pages, images, videos, or other online data.

Netiquette

Netiquette refers to the set of rules and guidelines for appropriate behavior when communicating online. It encompasses respecting others, maintaining a positive online environment, and ensuring efficient communication. Essentially, it's about treating others with the same courtesy and respect online as you would in person.

Here's a breakdown with examples:

Core Principles:

- **Remember the Human:**

Recognize that behind every message, email, or comment, there is a real person with feelings and emotions.

- **Be Respectful:**

Use polite language, avoid personal attacks, and be mindful of others' opinions and beliefs.

- **Maintain Privacy:**

Respect the privacy of others and avoid sharing personal information without permission.

- **Be Helpful:**

Offer assistance to new users or those who may be struggling with online communication.

- **Be Mindful of Your Tone:**

Avoid using all caps, which can be perceived as shouting, and be aware that sarcasm and humor can be difficult to convey online.

- **Check Before You Click:**

Review your message before sending it to ensure clarity and accuracy.

- **Avoid Spamming:**

Sending repetitive messages or unwanted content can be disruptive and annoying.

- **Know Your Audience:**

Adjust your language and tone based on the context and the people you are interacting with.

Examples:

- **In a Forum or Social Media:**

When commenting on a post, include a relevant quote from the original message to provide context for your comment.

- **In an Email:**

Before sending a message, proofread it for any errors and ensure that the tone is appropriate for the recipient.

- **In a Group Chat:**

Avoid using slang or jargon that others may not understand, and be mindful of the conversation's flow.

- **In a Video Call:**

Ensure your background is appropriate and that you are attentive and engaged during the call.

- **When Sharing Information:**

Always ask for permission before sharing someone's personal information or photos online.

- **When Responding to Criticism:**

Instead of reacting defensively, try to understand the other person's perspective and respond calmly.

- **When Interacting with New Users:**

Be patient and offer guidance to those who are new to online platforms.

Task 4: Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to customize their browsers to block pop ups, block active x downloads to avoid viruses and/or worms.

Various internet viruses can be categorized into several types, including worms, Trojans, viruses, and ransomware. These malicious programs can cause significant damage to computer systems and networks, including data loss, system instability, and security breaches. Understanding the different types of viruses and how they operate is crucial for effective protection and mitigation.

Here's a breakdown of some common types of internet viruses:

1. Worms: Worms are self-replicating malware that can spread rapidly across networks without needing to attach to other files. They often exploit security vulnerabilities in operating systems or applications to propagate. Examples include the Conficker worm, which infected millions of computers, and the SQL Slammer worm, which caused widespread network outages.

2. Trojans: Trojan horses, or Trojans, disguise themselves as legitimate software to trick users into installing them. Once installed, they can perform malicious actions such as stealing sensitive information, installing backdoors, or launching further attacks. Examples include the Storm Worm, which was used to create a botnet, and Cryptolocker, which was a ransomware Trojan.

3. Viruses: Viruses are malicious programs that attach themselves to other executable files and replicate when those files are run. They can cause various types of damage, including deleting files, corrupting data, or causing system instability. Examples include the ILOVEYOU virus, which spread through email, and the Melissa virus, which also spread via email and caused significant damage.

4. Ransomware: Ransomware is a type of malware that encrypts files on a victim's computer and demands a ransom payment for their decryption. This form of malware can be particularly devastating, as it can lead to significant financial losses and data loss. Examples include CryptoLocker and WannaCry.

5. Other notable types: Other types of internet viruses include:

- **Boot Sector Viruses:**

These viruses infect the boot sector of a hard drive, which is crucial for starting up the computer.

- **Multipartite Viruses:**

These viruses can infect a computer in multiple ways, making them more difficult to detect and remove.

- **Polymorphic Viruses:**

These viruses change their code each time they replicate, making them more difficult to detect by antivirus software.

- **Web Scripting Viruses:**

These viruses exploit vulnerabilities in web browsers or websites to spread malicious code.

- **Browser Hijackers:**

These viruses redirect users to malicious websites or modify browser settings.

- **File Infectors:**

These viruses attach themselves to executable files, spreading when those files are executed.

Important Considerations:

- **Malware vs. Virus:**

It's important to note that the term "virus" is often used interchangeably with "malware," but a virus is just one type of malware. Malware is a broader term that encompasses various types of malicious software designed to harm computer systems.

- **Staying Safe:**

To protect yourself from these threats, it's essential to use a reputable antivirus program, keep your software up to date, avoid clicking on suspicious links or attachments, and be cautious about downloading files from untrusted sources.

To customize your browser for enhanced security and virus protection, focus on enabling strong security settings, regularly updating your browser, and being cautious about add-ons and downloads. Additionally, consider using a privacy-focused browser and being mindful of your online habits.

Here's a more detailed breakdown:

1. Browser Settings:

- **Enable Safe Browsing:**

Most browsers offer a "Safe Browsing" feature that provides warnings about potentially harmful websites and downloads. Enable this feature and consider using the "Enhanced Protection" setting for maximum security according to Google Help.

- **Always use secure connections (HTTPS):**

Ensure your browser is set to always use secure connections (HTTPS) when available. This encrypts your traffic and makes it harder for attackers to intercept your data.

- **Manage cookies and site data:**

Review your browser's cookie settings and consider blocking third-party cookies, which can be used for tracking and potentially malicious purposes.

- **Manage pop-ups:**

Disable or block pop-up windows, as they can be a common vector for malware.

2. Browser Updates:

- **Regular updates:** Keep your browser and its components (like plugins and extensions) up to date. Updates often include security patches that address newly discovered vulnerabilities.

3. Add-ons and Extensions:

- **Install sparingly:** Only install add-ons and extensions from trusted sources.
- **Review permissions:** Carefully examine the permissions requested by extensions and only grant those that are absolutely necessary.
- **Consider privacy-focused extensions:** Some extensions, like ad blockers or privacy-focused browsers, can enhance your security and privacy.

4. Privacy-Focused Browsers:

-

Brave:

Brave browser is designed for privacy and security, automatically blocking trackers and ads and offering anti-phishing and anti-malware protection.

-

Firefox:

Firefox is a secure and customizable browser with a strong focus on user privacy.

-

Tor:

Tor Browser is designed for anonymous browsing and is a good option for users who need maximum privacy.

- **DuckDuckGo:**

DuckDuckGo offers a private search engine and browser that does not track user activity.

5. General Online Habits:

- **Be cautious about downloads:**

Only download files from trusted sources and scan them with antivirus software before opening them.

- **Be wary of phishing attempts:**

Avoid clicking on links or opening attachments from unknown senders, as these can lead to phishing sites or malware downloads.

- **Enable multi-factor authentication (MFA):**

If your browser is connected to an account, enable MFA to add an extra layer of security.

- **Close out of your browser regularly:**

Closing your browser can help prevent malicious scripts from running in the background.

LaTeX and WORD

Task 1 – Word Orientation: The mentor needs to give an overview of La TeX and Microsoft (MS) office or equivalent (FOSS) tool word: Importance of La TeX and MS office or equivalent (FOSS) tool Word as word Processors, Details of the four tasks and features that would be covered in each, Using La TeXand word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word.

Introduction to Microsoft Word

Microsoft Word is one of the most widely used word processing programs, known for its flexibility and ease of use in creating, editing, and formatting documents. Whether you're drafting a simple letter, preparing a resume, or working on a formal report, **MS Word** provides a rich set of tools to help you produce professional and well-structured content. With features like **text formatting in Word**, **inserting tables and images**, **page layout options**, and built-in templates, users can handle a wide range of document tasks efficiently.

Key Features of Microsoft Word

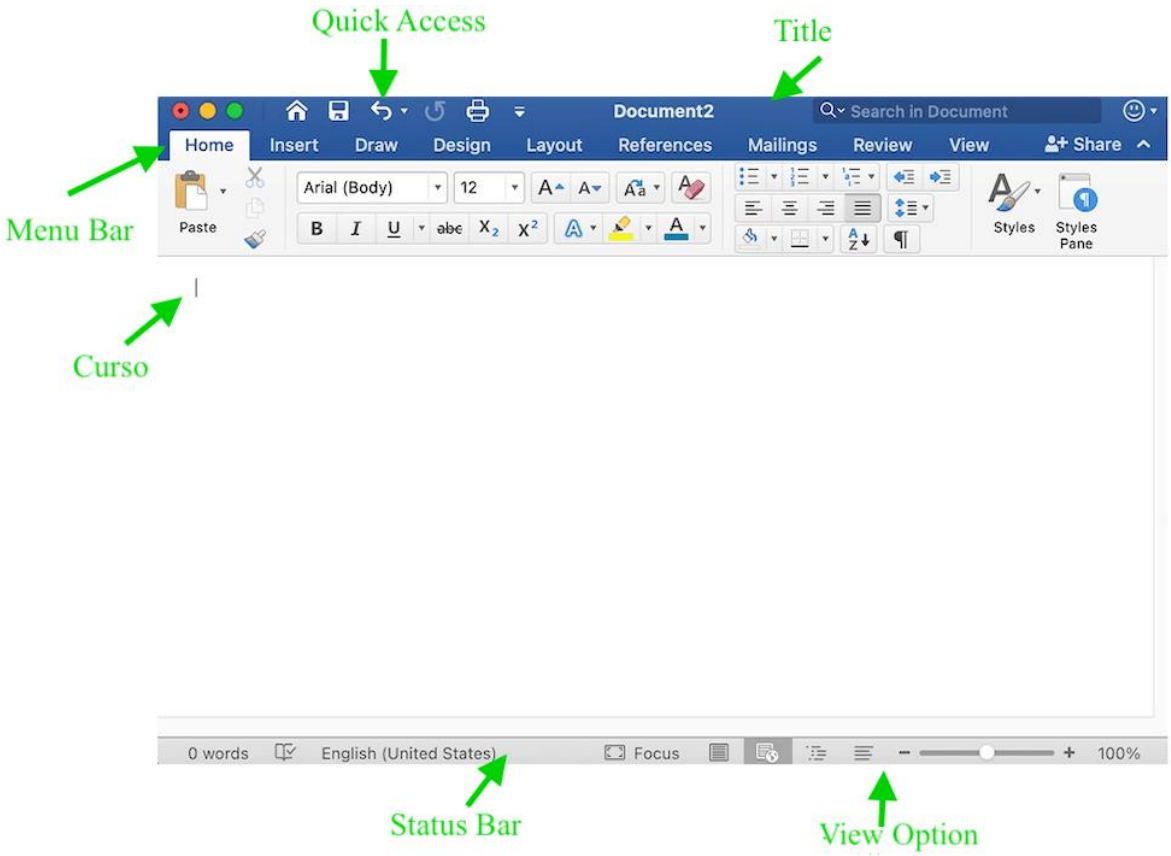
Microsoft Word comes with a wide range of tools designed to simplify document creation, editing, and formatting. These key features make it ideal for students, professionals, and businesses alike.

- **Easy-to-Use Interface**: Microsoft Word offers a clean and intuitive layout with Ribbon tabs, making document editing and formatting simple for beginners and professionals.
- **Advanced Text Formatting**: Customize fonts, colors, spacing, bullet points, and alignment to create professional-looking documents.
- **Built-in Templates**: Choose from a wide variety of pre-designed templates for resumes, letters, reports, brochures, and more.
- **Real-Time Spell Check and Grammar Correction**: Automatically detect spelling and grammar mistakes as you type for error-free writing.
- **Insert Tables, Images, Charts, and Hyperlinks**: Enhance your documents with visual elements, smart art, and functional links.
- **Page Layout and Design Tools**: Adjust margins, orientation, page size, and apply themes, borders, and watermarks.
- **Collaboration and Track Changes**: Share documents online, co-author in real time, and use comments and track changes for smooth collaboration.
- **Mail Merge Functionality**: Automate the creation of personalized letters, labels, and emails using data from Excel or Outlook.
- **Cloud Storage with OneDrive**: Access and edit documents from anywhere with Microsoft 365 cloud integration.

- **Document Security and Protection**: Add passwords, restrict editing, and use digital signatures to protect sensitive content.

Microsoft Word Interface

The **Microsoft Word interface** features a structured layout with the Title Bar at the top, followed by Ribbon tabs like Home, Insert, and Layout. Below that, the workspace allows users to create, edit, and format documents efficiently using a wide range of tools.

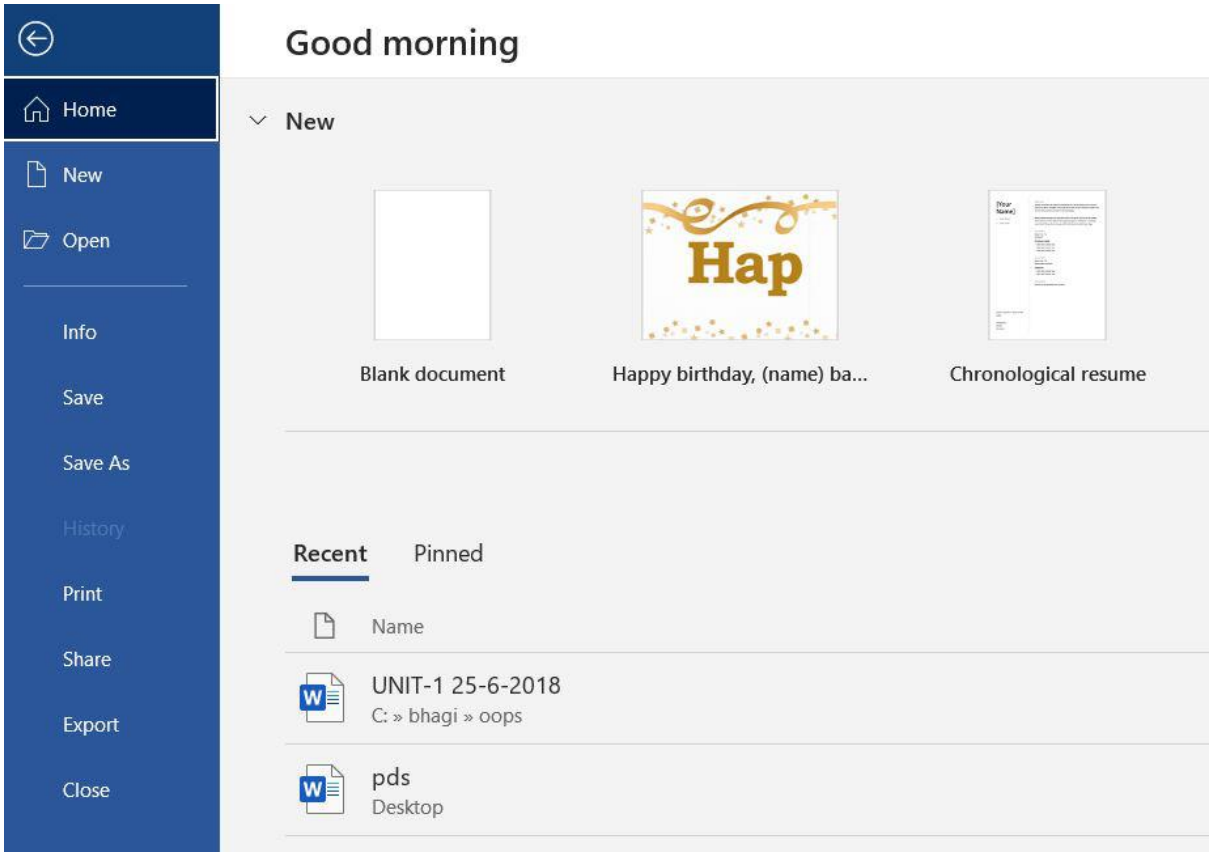


Microsoft Word Tabs Explained

Now let us discuss the tabs and components of the MS Word. Using these tabs, you can perform different types of operations on your documents, like you can create, delete, style, modify, or view the content of your document.

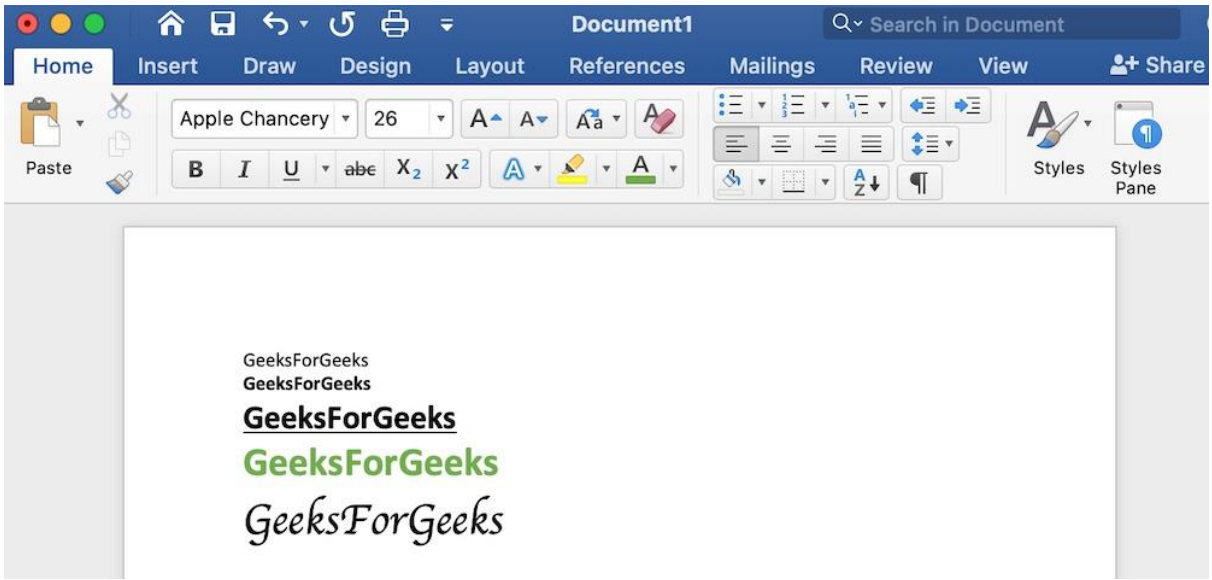
1. File

It contains options related to the file, like New(used to create a new document), Open(used to open an existing document), Save(used to save document), Save As(used to save documents), History, Print, Share, Export, Info, etc.



2. Home

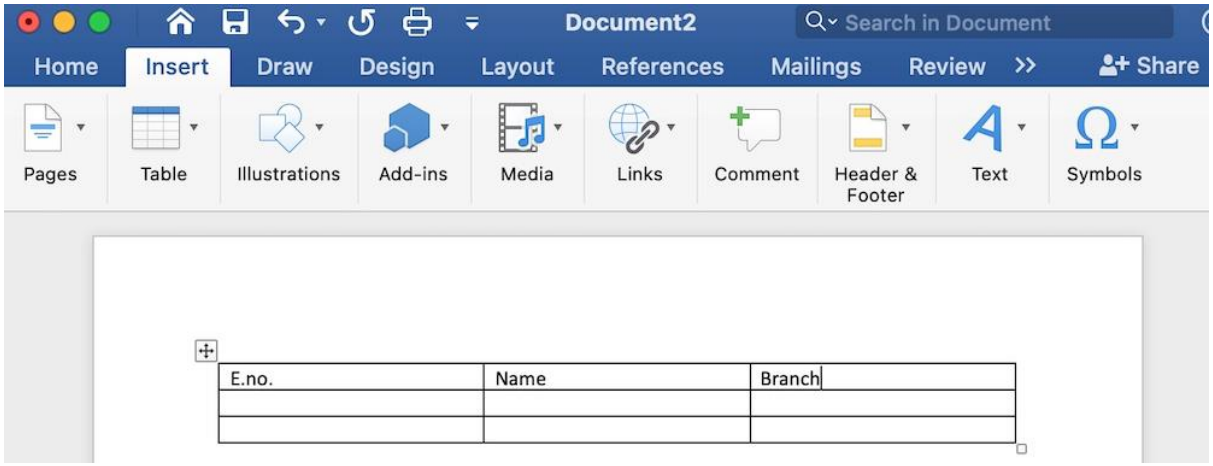
It is the default tab of MS Word and it is generally divided into five groups, i.e., Clipboard, Font, Paragraph, Style and Editing. It allows you to select the color, font, emphasis, bullets, position of your text. It also contains options like cut, copy, and paste. After selecting the home tab you will get below options:



3. Insert

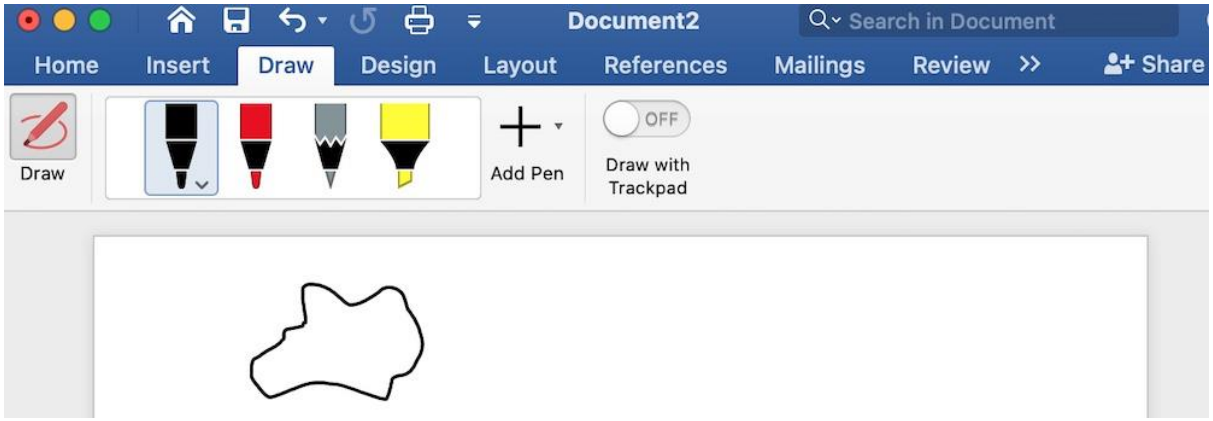
It is the second tab present on the menu bar or ribbon. It contains various iteMS that you may want to insert into a Microsoft word. It includes options like tables, word art, hyperlinks,

symbols, charts, signature line, date and time, shapes, header, footer, text boxes, links, boxes, equations, etc., as shown in the below image:



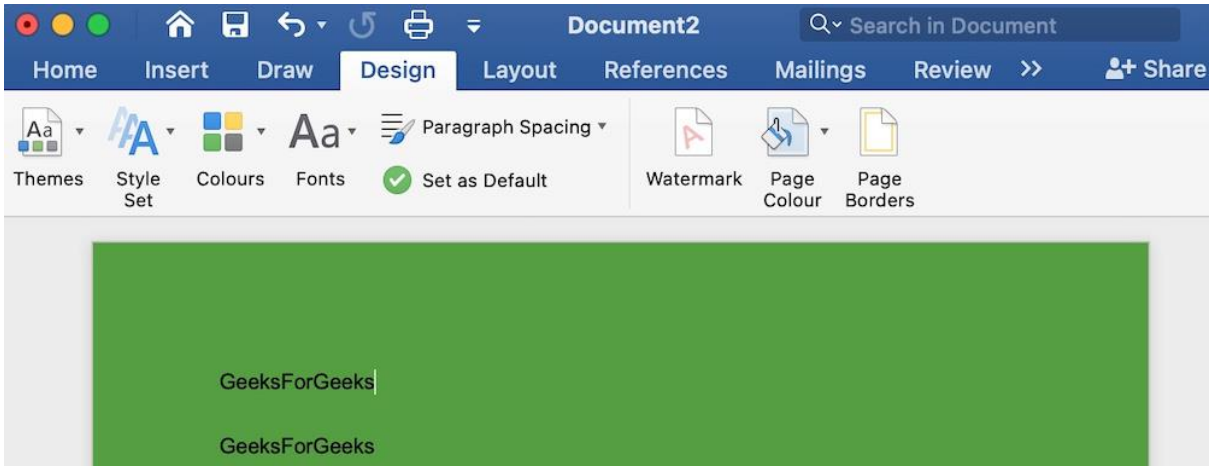
4. Draw

It is the third tab present in the menu bar or ribbon. It is used for freehand drawing in MS Word. It provides different types of pens for drawing as shown below:



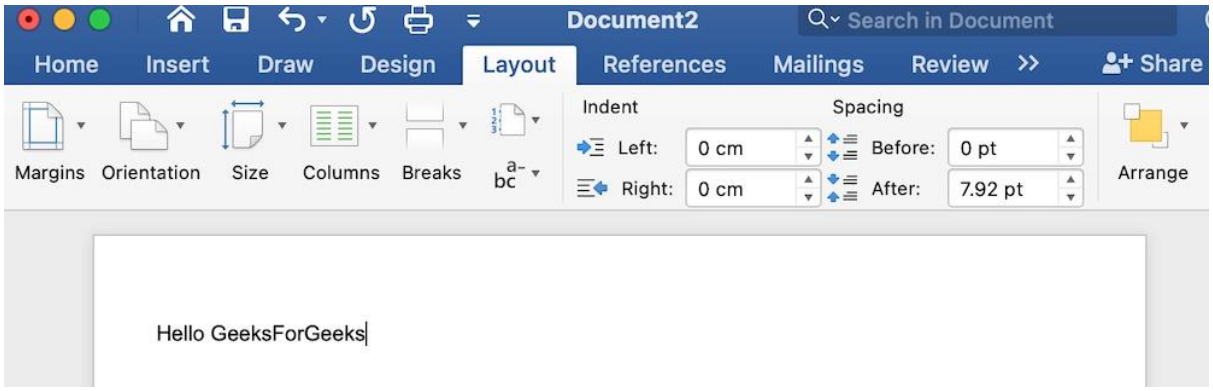
5. Design

It is the fourth tab present in the menu bar or ribbon. The design tab contains document designs that you can select, such as documents with centered titles, offset headings, left-justified text, page borders, watermarks, page color, etc., as shown in the below image:



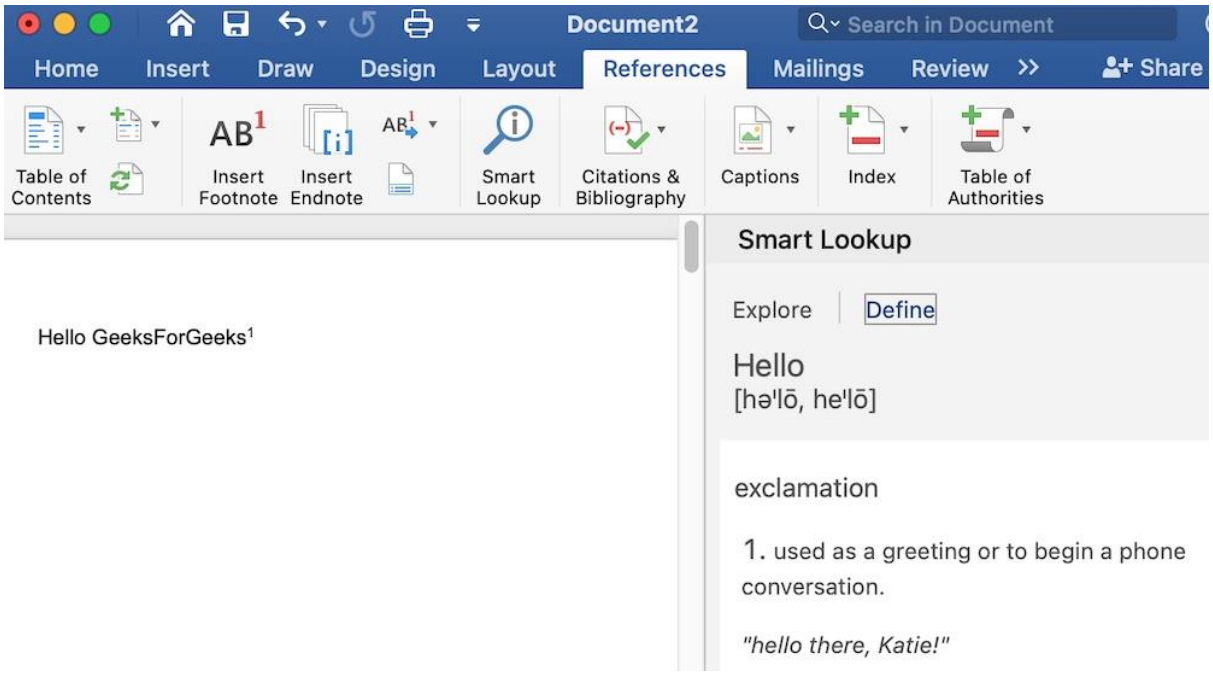
6. Layout

It is the fifth tab present on the menu bar or ribbon. It holds all the options that allow you to arrange your Microsoft Word document pages just the way you want them. It includes options like set margins, display line numbers, set paragraph indentation, and lines apply themes, control page orientation and size, line breaks, etc., as shown in the below image:



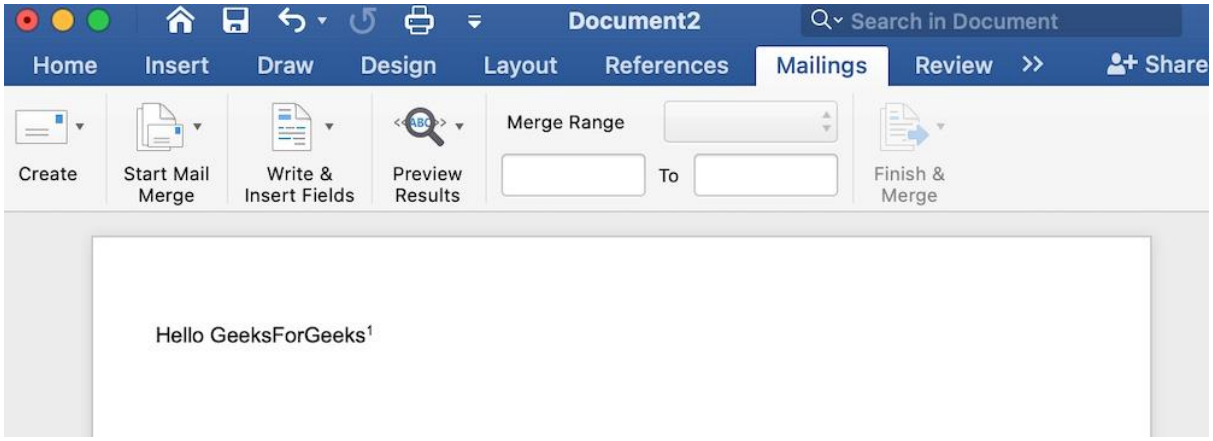
7. References

It is the sixth tab present in the menu bar or ribbon. The references tab lets you add references to a document, then create a bibliography at the end of the text. The references are generally stored in a master list, which is used to add references to further documents. It includes options like, Table of Contents, Footnotes, Citations & Bibliography, Captions, Index, Table of Authorities, smart look, etc. After selecting References tab, you will get the below options:



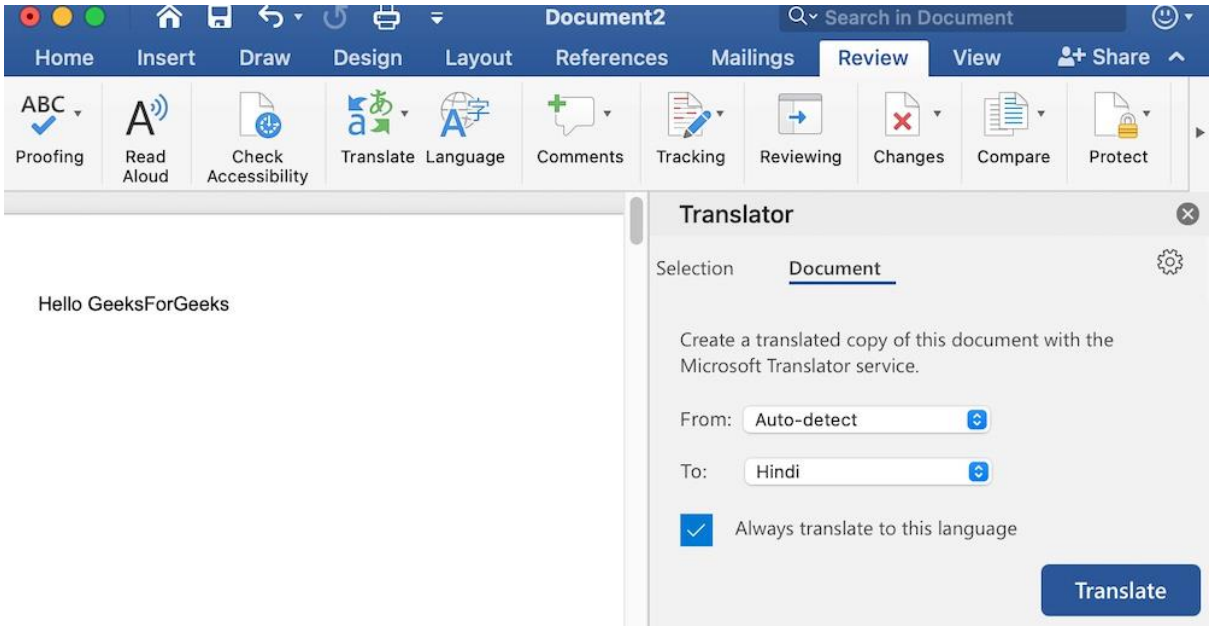
8. Mailings

It is the seventh tab present in the menu bar or ribbon. It is a least used tab in the menu bar. This tab is where you would create labels, print them on envelopes, do mail merge, etc. After selecting mailing, you will get the below options:



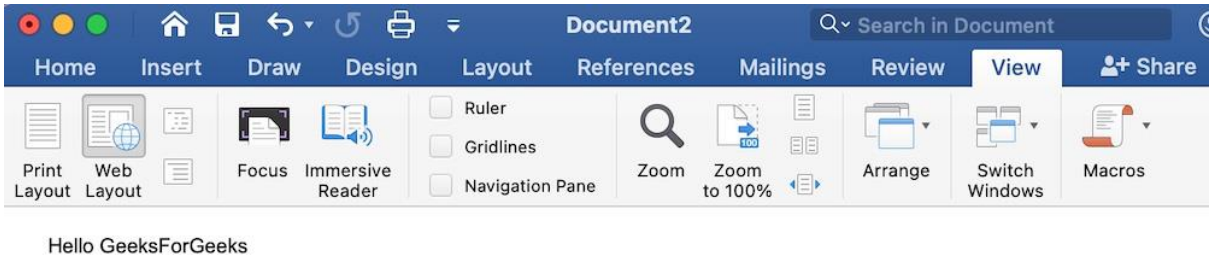
9. Review

It is the eighth tab present in the menu bar or ribbon. The review tab contains, commenting, language, translation, spell check, word count tools. It is good for quickly locating and editing comments. After selecting a review tab, you will get the options below:



10. View

It is the ninth tab present in the menu bar or ribbon. View tab allows you to switch between single page or double page and also allows you to control the layout tools It includes print layout, outline, web layout, task pane, toolbars, ruler, header and footer, footnotes, full-screen view, zoom, etc. as shown in the below image:



Microsoft Word File Formats

Microsoft Word supports multiple file formats to ensure compatibility, flexibility, and ease of sharing across different platforms and applications. The most commonly used formats include:

- **.DOC**: The original Word file format used in older versions of Microsoft Word (Word 97–2003). It offers basic compatibility with many word processors but lacks advanced features of newer formats.
- **.DOCX**: The default format in modern versions of Word (from Word 2007 onwards). It is a compressed, XML-based format that provides better file size optimization, improved data recovery, and enhanced compatibility with other software.
- **.PDF**: Word allows users to save or export documents as **PDF files** for easy sharing and printing. PDF maintains formatting and prevents unauthorized editing.
- **.RTF (Rich Text Format)**: This format supports basic text formatting and can be opened by a wide range of word processors, making it suitable for cross-platform text exchange.
- **.TXT (Plain Text)**: A simple format that contains no formatting, ideal for transferring raw text between programs.
- **.ODT (OpenDocument Text)**: Compatible with open-source office applications like LibreOffice, enabling users to work across different software environments.
- **.HTML / .HTM**: Word can save documents as HTML files, useful for creating basic web pages or integrating content with websites.

What is LaTeX?

LaTeX (pronounced "*LAY*-tek" or "*LAH*-tek") is a tool for typesetting professional-looking documents. However, LaTeX's mode of operation is quite different to many other document-production applications you may have used, such as Microsoft Word or LibreOffice Writer: those "WYSIWYG" tools provide users with an interactive page into which they type and edit their text and apply various forms of styling. LaTeX works very differently: instead, your document is a plain text file interspersed with LaTeX *commands* used to express the desired (typeset) results. To produce a visible, typeset document, your LaTeX file is processed by a piece of software called a *TeX engine* which uses the commands embedded in your text file to guide and control the typesetting process, converting the LaTeX commands and

document text into a professionally typeset PDF file. This means you only need to focus on the *content* of your document and the computer, via LaTeX commands and the TeX engine, will take care of the *visual appearance* (formatting).

Writing your first piece of LaTeX

The first step is to create a new LaTeX project. You can do this on your own computer by creating a new .tex file; alternatively, you can start a new project in Overleaf.

Let's start with the simplest working example, which can be opened directly in Overleaf:

\documentclass{article}

\begin{document}

First document. This is a simple example, with no

extra parameters or packages included.

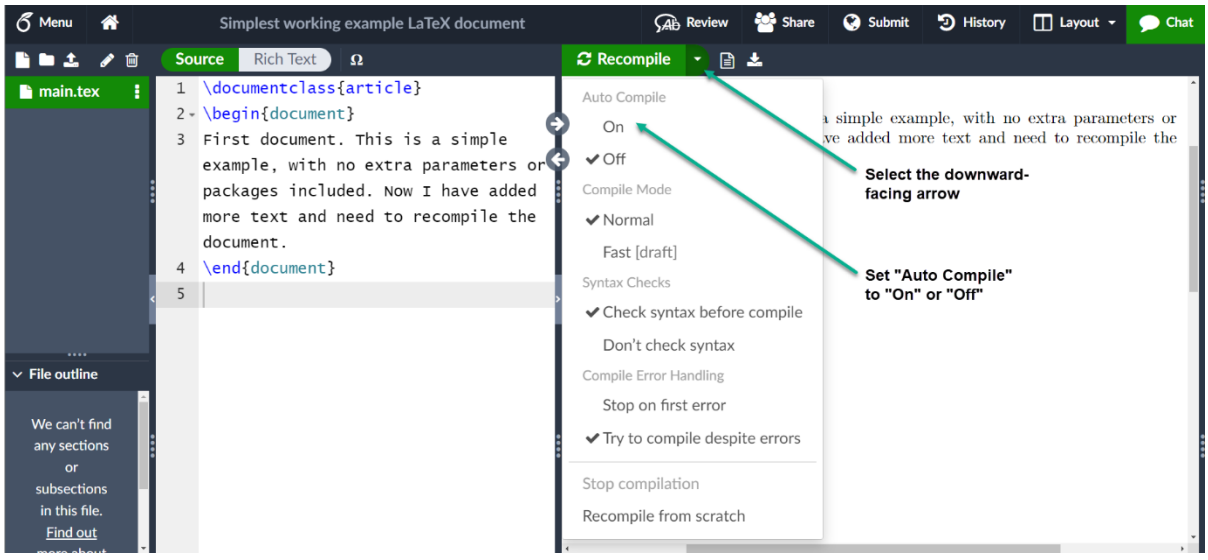
\end{document}

Open this example in Overleaf.

This example produces the following output:

You can see that LaTeX has automatically indented the first line of the paragraph, taking care of that formatting for you. Let's have a closer look at what each part of our code does.

Any Overleaf project can be configured to recompile automatically each time it is edited: click the small arrow next to the **Recompile** button and set **Auto Compile** to **On**, as shown in the following screengrab:



Adding images

In this section we will look at how to add images to a LaTeX document. Overleaf supports three ways to insert images:

1. Use the **Insert Figure** button( ), located on the editor toolbar, to insert an image into **Visual Editor** or **Code Editor**.
2. Copy and paste an image into **Visual Editor** or **Code Editor**.
3. Use **Code Editor** to write LaTeX code that inserts a graphic.

Options 1 and 2 automatically generate the LaTeX code required to insert images, but here we introduce option 3—note that you will need to upload those images to your Overleaf project. The following example demonstrates how to include a picture:

```
\documentclass{article}

\usepackage{graphicx} %LaTeX package to import graphics

\graphicspath{{images/}} %configuring the graphicx package


\begin{document}

The universe is immense and it seems to be homogeneous,

on a large scale, everywhere we look.


% The \includegraphics command is

% provided (implemented) by the

% graphicx package

\includegraphics{universe}


There's a picture of a galaxy above.

\end{document}
```

Open this image example in Overleaf.

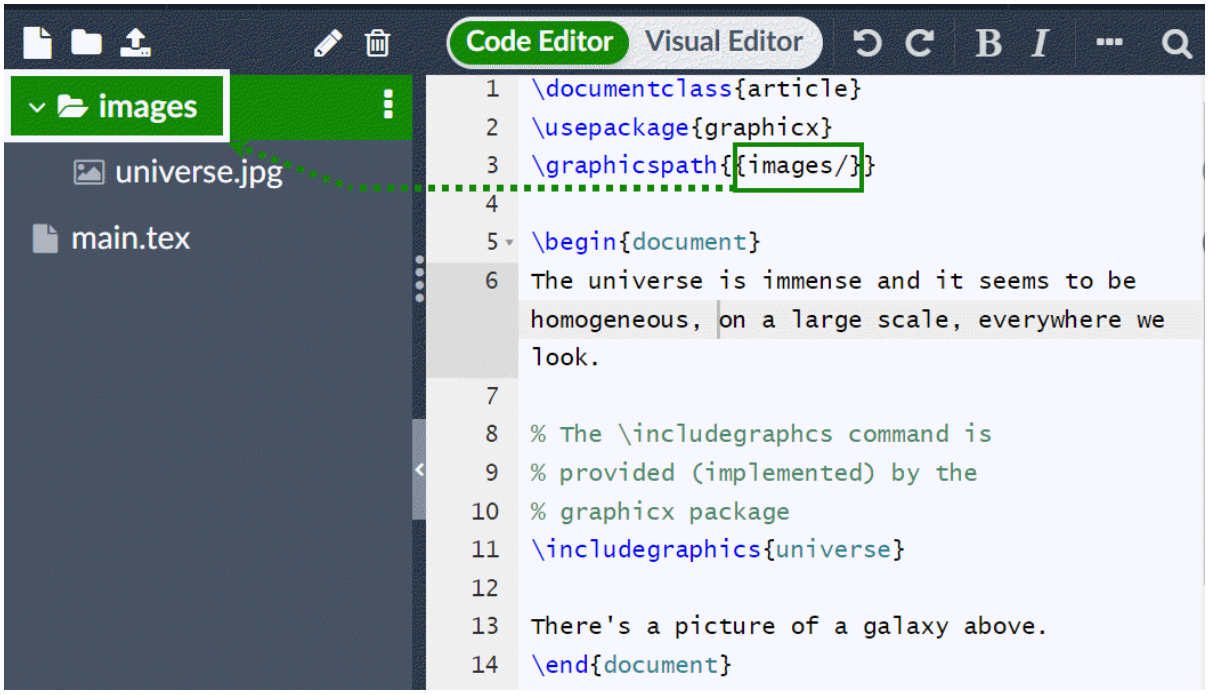
This example produces the following output:

Importing graphics into a LaTeX document needs an add-on *package* which provides the commands and features required to include external graphics files. The above example loads the graphicx package which, among many other commands, provides \includegraphics{...} to import graphics and \graphicspath{...} to advise LaTeX where the graphics are located.

To use the graphicx package, include the following line in your Overleaf document preamble:

```
\usepackage{graphicx}
```

In our example the command \graphicspath{{images/}} informs LaTeX that images are kept in a folder named images, which is contained in the current directory:



The \includegraphics{universe} command does the actual work of inserting the image in the document. Here, universe is the name of the image file but without its extension.

Task 2: Using La TeX and Word to create a project certificate. Features to be covered:- Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both La TeX and Word.

THEORY:

Header and Footer:

1. To create a header, enter text or graphics in the header area or click button on the header and footer tool bar.

2. To create footer, click switch between header and footer.

3. Then click exit.

Date and Time:

Insert a date field that automatically updates so that the current date is displayed when you open or print the file.

Insert a time field that automatically updates so that the current time is displayed when you open or print the file.

Border:

•On the format menu, click borders and shadings.

•To specify that the border appears on a particular side of a page, such as only at the top,

click custom under setting.

•To specify a particular page or section for the borders to appear, click the option you

want to apply.

•To specify the exact position of the border on the page. Finally, click OK.

Color:

•Select the text you want to make a different color.

•To apply the color most recently applied to text, click font color.

•To apply different colors, click the arrow on the right of the font color button, select the color you want and then click the button

Latex

```
\usepackage{eso-pic}     %package for including background image
```

```
\usepackage{datetime}
\begin{document}
\includegraphics[width=500pt,height=90pt,
 keepaspectratio]{logo1.jpg}  % here include background image
\begin{center}
\textbf{\LARGE Project Certificate}
\end{center}
\vspace{1cm}
This is to certify that \textbf{\Large \underline{Your Name}} has completed
his PROJECT WORK in the MITS,Madanapalle: \textbf{\Large \
underline{Event Name}} held on \today.
\vspace{1cm}
\end{document}
```

Note: logo1.jpg should be uploaded in overleaf

Task 3: Creating project abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

In this task, every student has to create a **project abstract document** using a word processing software (like MS Word, Google Docs, etc.).

While preparing the abstract, the following **features** should be used: **1. Open your word processor**

- Open MS Word, Google Docs, or any document editor.
- Create a **new document**.

---

2. Write your project abstract

- Type the title of your project (example: *Online Shopping Website*).
- Below the title, write 5-6 lines about your project.

---

3. Apply Formatting Styles

- Select the title → Make it **bold**, change font size (e.g. 16 or 18), and apply underline if you want.
- Select the abstract text → Make it **regular font** (e.g. size 12), and use italics if needed.

---

4. Insert Table

- Go to Insert → Table → Choose how many rows/columns you need (e.g. 2x2 table).
- In the table, write data (example: *Module Name*, *Description*).

---

5. Apply Bullets and Numbering

- Make a list of features using bullets → Go to Home → Bullets.
- Make a list of steps using numbering → Go to Home → Numbering.

---

6. Change Text Direction

- Click inside a table cell → Right-click → Select Text Direction.
- Choose vertical or rotated text if needed (used mostly in table headers).

---

7. Cell Alignment

- Click inside a table cell → Right-click → Select Cell Alignment.
- Align text to centre, left, top, bottom as you like.

8️⃣ Insert Footnote

- Place the cursor where you want to add extra info → Go to References → Click Insert Footnote.
- At the bottom of the page, type your footnote text.

9️⃣ Insert Hyperlink

- Select a word or email → Right-click → Hyperlink → Enter website address (e.g. https://www.google.com) or email (e.g. abc@gmail.com).

🔟 Insert Symbols

- Go to Insert → Symbol → Choose a symbol (like ₹, ©, π).

1️⃣1️⃣ Spell Check

- In MS Word: Review → Click Spelling & Grammar.
- It will highlight mistakes. Correct them one by one.

1️⃣2️⃣ Track Changes

- Go to Review → Click Track Changes.
- Now any editing will be shown with red marks or bubbles on the side.

Task 4: Creating a Newsletter: Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs and Mail Merge in word.

1. Open a new document

- **Open MS Word → New → Choose a blank page or newsletter template (if available).**

---

2. Add Table of Content

- **At the top of the document, write *Table of Content* or *Contents*.**
- **Go to References → Table of Contents → Insert an automatic table (or type manually).**

---

3. Create Newspaper Columns

- **Select the text for your newsletter articles.**
- **Go to Layout or Page Layout → Columns → Select Two or Three columns to make it look like a newspaper.**

---

4. Insert Images

- **Go to Insert → Pictures → Select from your files.**
- **Or go to Insert → Online Pictures or Clipart → Select an image.**

---

5. Use Drawing Toolbar and WordArt

- **Go to Insert → Shapes → Draw shapes (like arrows, boxes).**
- **Go to Insert → WordArt → Choose a WordArt style and type a heading or title with special text design.**

---

6. Format Images

- **Click on image → Go to Picture Format → You can crop, add border, apply shadow, or change brightness.**

---

7. Add Textboxes

- **Go to Insert → Text Box → Draw a textbox anywhere to highlight special news or quotes.**

---

8. Format Paragraphs

- **Select paragraph → Adjust line spacing, alignment (left, right, justify), add bullets or numbering if needed.**

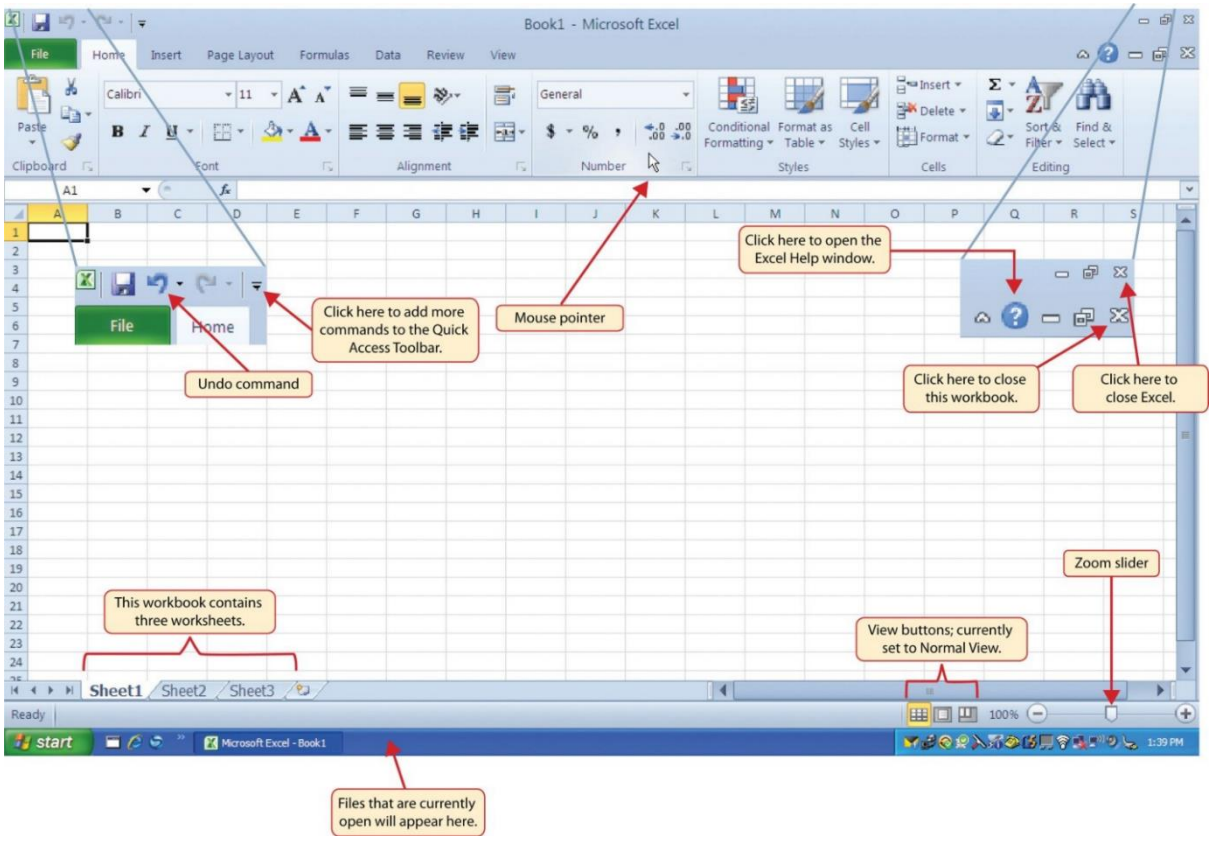
---

9. Mail Merge (for sending newsletter to many people)

- **Go to Mailings → Start Mail Merge → Select Letters or E-mail Messages.**
- **Connect to a data source (like Excel with names and emails).**
- **Insert merge fields (like Name, Address).**
- **Finish & Merge → Print or send emails.**

EXCEL

Excel Orientation: The mentor needs to tell the importance of MS office or equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered in each. Using Excel – Accessing, overview of toolbars, saving excel files, Using help and resources.


Book1 - Microsoft Excel
Click here to open the Excel Help window.
Click here to add more commands to the Quick Access Toolbar.
Mouse pointer
Undo command
Click here to close this workbook.
Click here to close Excel.
Zoom slider
This workbook contains three worksheets.
View buttons; currently set to Normal View.
Files that are currently open will appear here.

🌟 Importance of Excel

✅ 1. Easy Data Handling

- Excel helps to **store, organise, and manage data** neatly in rows and columns.
- You can keep records like marks, expenses, attendance, salary details, etc.

✅ 2. Quick Calculations

- Excel can do **automatic calculations** using formulas (like addition, average, percentage).
- Saves time and reduces human errors in maths.

✅ 3. **Data Analysis**

- You can **filter, sort, and analyse data** easily.
- Excel helps you to study large data and find useful patterns (example: sales report, exam results).

✅ 4. **Charts and Graphs**

- Excel can create **pie charts, bar graphs, line charts** to show data visually.
- This helps to present data clearly in meetings or reports.

✅ 5. **Time Saving**

- With features like **formulas, templates, and auto-fill**, Excel helps to complete work faster.

✅ 6. **Useful in All Fields**

- Excel is used in offices, schools, banks, shops, industries, and many other places.
- It is useful for students, teachers, accountants, engineers, business people, etc.

✅ 7. **Data Security and Sharing**

- Excel allows you to **protect files with passwords**.
- You can easily **share your Excel file** with others.

Task 1: Creating a Scheduler - Features to be covered: Gridlines, Format Cells, Summation, auto fill, Formatting Text.

To create a scheduler in Excel with the specified features, you'll first set up a grid with days and times, then format cells, use formulas for summation, utilize auto fill, and format the text. Specifically, you can customize gridlines, apply formatting like colors and borders, sum values using functions like SUM, automatically fill in repetitive data, and adjust text alignment, font styles, and sizes.

Here's a more detailed breakdown:

1. Setting up the Grid and Header:

- **Open Excel:** Start with a new blank workbook.
- **Create Header Row:** Enter days of the week (e.g., Monday, Tuesday) across the top row.
- **Add Time Slots:** Enter time intervals (e.g., 9:00 AM, 10:00 AM) down the first column.

2. Formatting Cells:

- **Select Cells:** Choose the cells you want to format.
- **Format Cells:** Use the "Format Cells" dialog box (right-click, Format Cells) or the options on the "Home" tab to:
    - **Change Fill Color:** Apply background colors to highlight specific cells or time slots.
    - **Add Borders:** Use borders to visually separate cells or create a grid effect.
    - **Adjust Text Alignment:** Align text to the left, right, or center within the cells.
    - **Format Font:** Change the font style, size, and color.

3. Summation:

- **Use SUM Function:**

If you need to calculate totals (e.g., total hours for a shift), use the SUM function. For example, to sum the values in cells B2 to B10, you would enter =SUM(B2:B10).

- **Other Functions:**

Explore other functions like COUNT, AVERAGE, etc., as needed for your specific calculations.

4. Auto Fill:

- **Fill Handle:** Select the cell(s) with the data you want to repeat (e.g., a time series).
- **Drag:** Click and drag the fill handle (small square at the bottom right of the selection) to automatically fill adjacent cells.
- **Auto Fill Options:** Click the Auto Fill Options icon (appears after filling) to choose options like "Fill Series", "Fill Formatting Only", etc.

5. Formatting Text:

- **Font:** Select the text you want to format.
- **Font Group:** Use the font options (font type, size, color, bold, italics, etc.) on the "Home" tab to customize the appearance of the text.
- **Text Alignment:** Use the alignment options on the "Home" tab to adjust how the text appears within the cell.

6. Gridlines (Optional):

- **View Tab:** Go to the "View" tab.
- **Gridlines Checkbox:** Check or uncheck the "Gridlines" checkbox to show or hide gridlines.
- **Gridline Color:** If you want to change the gridline color, go to File > Options > Advanced > Display options for this worksheet, and adjust the "Gridline color".

Task 2: Calculating GPA -. Features to be covered:- Cell Referencing, Formulae in excel – average, std. deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function.

To calculate GPA in Excel, you'll use cell referencing, formulas for average and standard deviation, charts, worksheet manipulation, and the count function. First, input your data (grades and credit hours) into cells. Then, calculate GPA using formulas, create charts for visualization, and organize your data across multiple worksheets.

Here's a more detailed breakdown:

1. Setting up the Spreadsheet:

- **Cell Referencing:**

Excel uses cell references (like A1, B2, etc.) to locate data. You'll use these to refer to grades and credit hours in your formulas.

- **Worksheets:**

Create separate worksheets for different terms (e.g., "Fall 2024", "Spring 2025"). You can rename worksheets by right-clicking on the tab and selecting "Rename". To add a new worksheet, click the "+" button next to the existing tabs.

- **Data Input:**

In each worksheet, create columns for:

    - Course Name
    - Credit Hours
    - Grade (or Grade Points)

2. Calculating GPA:

- **Quality Points:**

Multiply each course's credit hours by its corresponding grade points. For example, if a 3-credit course has a grade of 3.5, the quality points would be 3 * 3.5 = 10.5. Use the formula = [Credit Hours Cell] * [Grade Cell] in a new column (e.g., "Quality Points").

- **Total Quality Points:**

Use the SUM function to add up all quality points for the term. The formula would look like this: =SUM([First Quality Points Cell]:[Last Quality Points Cell]).

- **Total Credit Hours:**

Use the SUM function to add up all credit hours for the term. =SUM([First Credit Hours Cell]:[Last Credit Hours Cell]).

- **GPA Calculation:**

Divide the "Total Quality Points" by the "Total Credit Hours" using the formula = [Total Quality Points Cell] / [Total Credit Hours Cell].

- **Average:**

Use the AVERAGE function to calculate the average grade or other numerical data in a range. =AVERAGE([First Cell]:[Last Cell]).

- **Standard Deviation:**

Use the STDEV.S function to calculate the sample standard deviation or STDEV.P for the population standard deviation. =STDEV.S([First Cell]:[Last Cell]) or =STDEV.P([First Cell]:[Last Cell]).

- **Count:**

Use the COUNT function to count the number of cells containing numerical data within a range. =COUNT([First Cell]:[Last Cell]).

3. Visualizing Data:

- **Charts:** Select the data you want to visualize (e.g., GPA trends across terms). Go to the "Insert" tab and choose a chart type (e.g., line chart for trends).

4. Hyperlinking:

- **Linking to Other Worksheets:** You can create hyperlinks within a worksheet to jump to other worksheets or even other files. Select the cell where you want the hyperlink, right-click, and choose "Hyperlink". Select "Place in This Document" and choose the target worksheet.

5. Copying and Pasting:

- **Copying Data:**

Select the cells you want to copy, press Ctrl+C, then navigate to the target cell and press Ctrl+V.

- **Paste Special:**

When pasting, you can choose "Paste Special" to paste only values, formulas, formats, etc. Right-click and select "Paste Special" or use the "Paste" dropdown on the "Home" tab.

LOOKUP/VLOOKUP

Task 3: Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting.

1. Splitting Cells:

- **Purpose:** To divide the content of a single cell into multiple columns or rows.
- **How to:**
    - Select the cell(s) you want to split.
    - Go to the "Data" tab on the ribbon.
    - Click "Text to Columns".
    - Choose either "Delimited" (if separated by a character like a comma or space) or "Fixed Width" (if the data has a consistent length).
    - Follow the prompts to specify the delimiter or column widths.
    - according to a Microsoft Support article, choose the destination for the split data and click "Finish".

2. Freezing Panes:

- **Purpose:**

To keep specific rows or columns visible when scrolling through a large worksheet.

- **How to:**
    - Select the cell below the rows and to the right of the columns you want to freeze.
    - Go to the "View" tab.
    - Click "Freeze Panes" and then select "Freeze Panes".
    - To unfreeze, click "Freeze Panes" and then "Unfreeze Panes".

3. Grouping and Outlining:

- **Purpose:**

To organize data into collapsible groups for better readability and management.

- **How to:**
    - Select the rows or columns you want to group.
    - Go to the "Data" tab.
    - Click "Group" and choose "Group" (or "Rows" or "Columns").
    - To collapse or expand a group, click the "+" or "-" buttons on the outline.

4. Sorting:

- **Purpose:**

To arrange data in ascending or descending order based on one or more columns.

- **How to:**
    - Select a cell within the column you want to sort.
    - Go to the "Data" tab.
    - Click either the "Sort A to Z" or "Sort Z to A" button for basic sorting.
    - For more complex sorting (e.g., sorting by multiple columns or custom lists), click "Sort" and configure the dialog box.

5. Boolean and Logical Operators:

- **Purpose:** To perform comparisons and make decisions within formulas.
- **Operators:**
    - **AND:** Returns TRUE if all conditions are true.
    - **OR:** Returns TRUE if at least one condition is true.
    - **NOT:** Returns the opposite of a condition (TRUE becomes FALSE, and vice versa).
    - **XOR:** Returns TRUE if only one condition is true.
- **How to:** These operators are used within logical functions like IF, SUMIF, COUNTIF, etc.

6. Conditional Formatting with VLOOKUP:

- **Purpose:**

To apply formatting (e.g., color, font, icons) to cells based on the results of a VLOOKUP.

- **How to:**
    - Use a VLOOKUP function to retrieve a value.
    - Create a conditional formatting rule based on the VLOOKUP result.
    - For example, if the VLOOKUP returns a specific value, you can highlight the corresponding cell with a certain color.
    - You can also use ISNA and IF functions in combination with VLOOKUP to handle cases where a match is not found.

Example of Conditional Formatting with VLOOKUP:

Let's say you have a list of products and prices, and you want to highlight products that have a price above $100.

POWER POINT

Task 1: Students will be working on basic power point utilities and tools which help them create basic power point presentations. PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in PowerPoint.

Basic tasks for creating a PowerPoint presentation

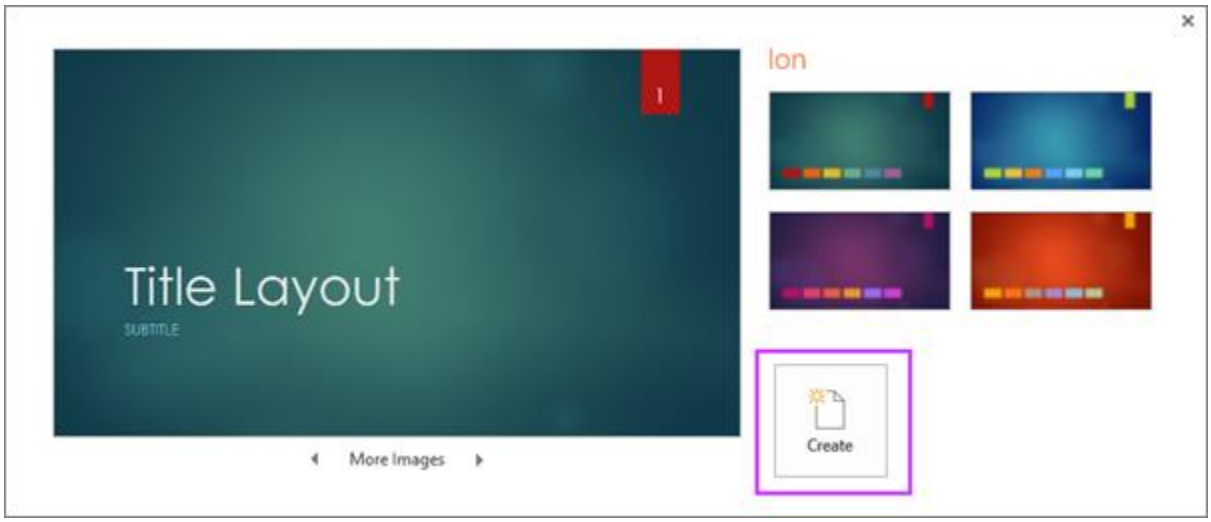
Choose a theme

When you open PowerPoint, you'll see some built-in themes and templates. A theme is a slide design that contains matching colors, fonts, and special effects like shadows, reflections, and more.

1. On the **File** tab of the Ribbon, select **New**, and then choose a theme.

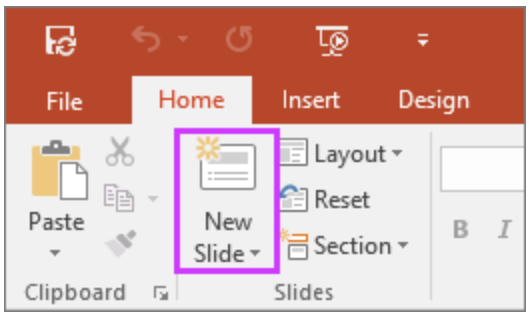
PowerPoint shows you a preview of the theme, with four color variations to choose from on the right side.

2. Click **Create**, or pick a color variation and then click **Create**.



Insert a new slide

- On the **Home** tab, click the bottom half of **New Slide**, and pick a slide layout.

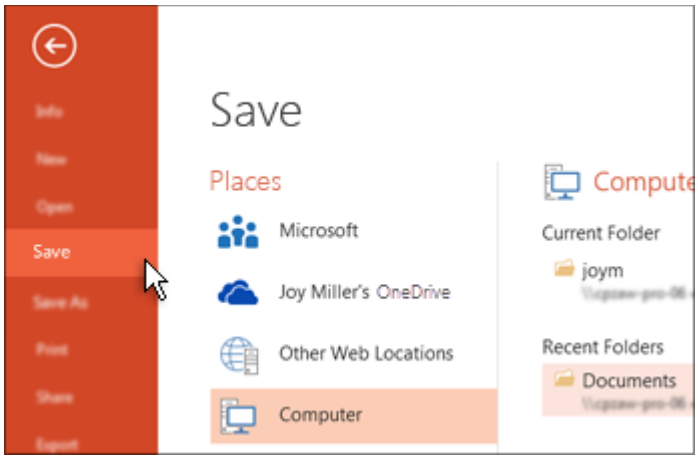


Save your presentation

1. On the **File** tab, choose **Save**.

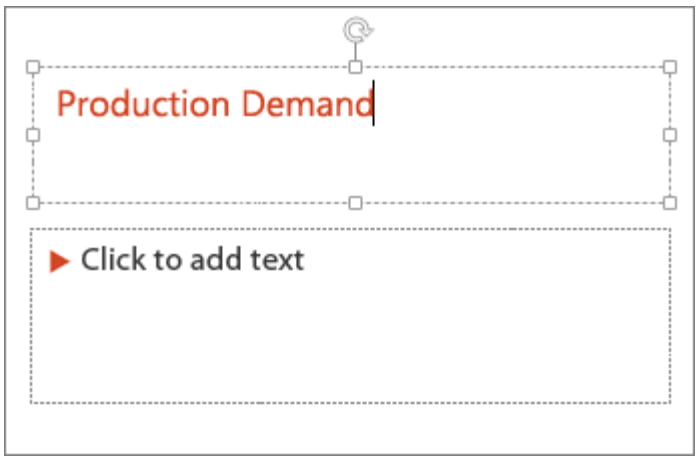
2. Pick or browse to a folder.
3. In the **File name** box, type a name for your presentation, and then choose **Save**.

Note: If you frequently save files to a certain folder, you can 'pin' the path so that it is always available (as shown below).



Add text

Select a text placeholder, and begin typing.



Format your text

1. Select the text.
2. Select **Shape Format**, then in the **WordArt Styles** group, you can do one of the following:
    - To change the color of your text, choose **Text Fill**, and then choose a color.
    - To change the outline color of your text, choose **Text Outline**, and then choose a color.
    - To apply a shadow, reflection, glow, bevel, 3-D rotation, a transform, choose **Text Effects**, and then choose the effect you want.

Read more:

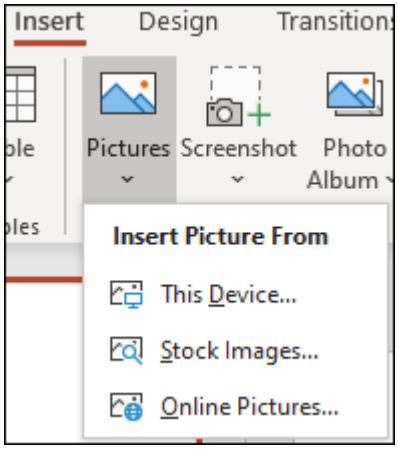
- Change the fonts

- Change the color of text on a slide
- Add bullets or numbers to text
- Format text as superscript or subscript

Add pictures

On the **Insert** tab, select **Pictures**, then do one of the following:

- To insert a picture that is saved on your local drive or an internal server, choose **This Device**, browse for the picture, and then choose **Insert**.
- (For Microsoft 365 subscribers) To insert a picture from our library, choose **Stock Images**, browse for a picture, select it and choose **Insert**.
- To insert a picture from the web, choose **Online Pictures**, and use the search box to find a picture. Choose a picture, and then click **Insert**.



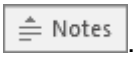
Add shapes

You can add shapes to illustrate your slide.

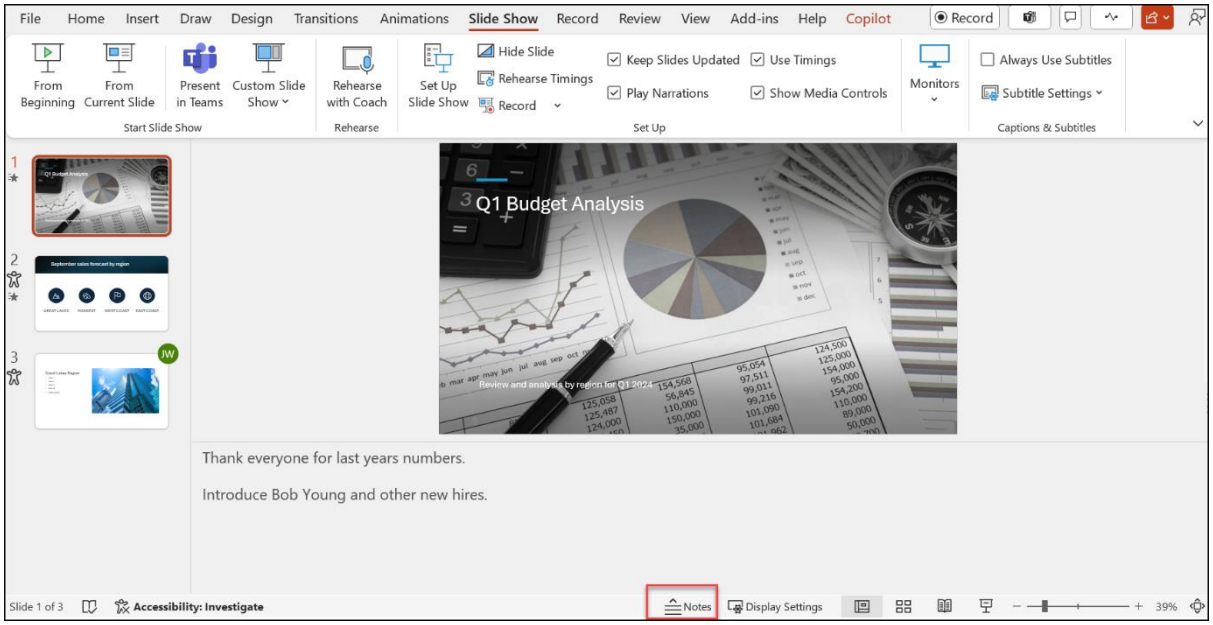
1. On the **Insert** tab, select **Shapes**, and then select a shape from the menu that appears.
2. In the slide area, click and drag to draw the shape.
3. Select the **Format** or **Shape Format** tab on the ribbon. Open the **Shape Styles** gallery to quickly add a color and style (including shading) to the selected shape.

Add speaker notes

Slides are best when you don't cram in too much information. You can put helpful facts and notes in the speaker notes, and refer to them as you present.

1. To open the notes pane, at the bottom of the window, click **Notes** 

.
2. Click inside the **Notes** pane below the slide, and begin typing your notes.



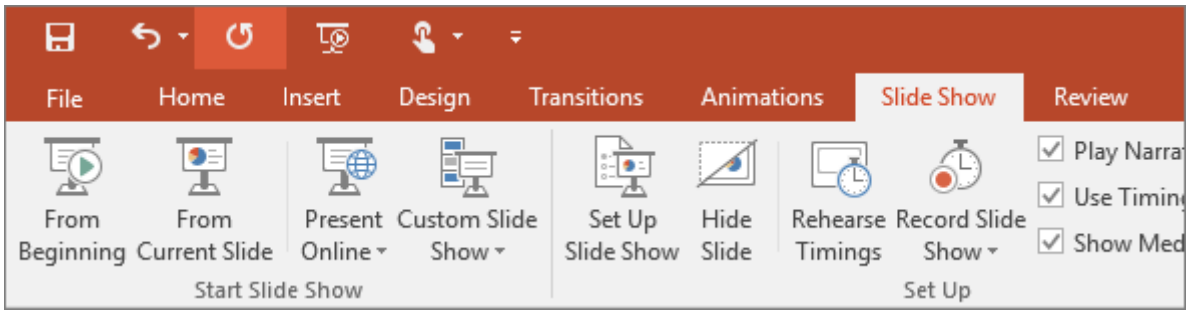
Read more:

- Add speaker notes to your slides
- Print slides with or without speaker notes

Give your presentation

On the **Slide Show** tab, do one of the following:

- To start the presentation at the first slide, in the **Start Slide Show** group, click **From Beginning**.



- If you're not at the first slide and want to start from where you are, click **From Current Slide**.
- If you need to present to people who are not where you are, click **Present Online** to set up a presentation on the web, and then choose one of the following options:
  - Broadcast your PowerPoint presentation online to a remote audience
  - View your speaker notes as you deliver your slide show.

Get out of Slide Show view

To get out of Slide Show view at any time, on the keyboard, press **Esc**.

Task 2: Interactive presentations - Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts.

To create an interactive PowerPoint presentation, you can use hyperlinks, insert various media like images, videos, and audio, and add objects, tables, and charts. Hyperlinks allow navigation to different slides, websites, or files, while media elements enhance engagement.

Here's a breakdown of how to incorporate these elements:

1. Hyperlinks:

- **Link to a website:**

Select the text or object, go to Insert > Link > Insert Link, and choose "Existing File or Web Page". Enter the URL and click OK.

- **Link to another slide:**

Select the object, go to Insert > Link > Insert Link, and choose "Place in This Document". Select the desired slide title and click OK, according to Microsoft Support.

- **Link to an email address:**

Select the text, go to Insert > Link > Insert Link, and choose "E-mail Address". Enter the email address and subject, and click OK, {according to Cedarville University}.

- **Test hyperlinks:**

Always test your hyperlinks by starting the slideshow (F5) and clicking on them.

2. Inserting Media:

- **Pictures:**

Go to Insert > Pictures and choose to insert from your device or online sources.

- **Clip Art:**

Go to Insert > Pictures > Online Pictures, search for clip art, and select it for insertion.

- **Audio:**

Go to Insert > Audio and choose to insert from your PC or record audio directly.

- **Video:**

Go to Insert > Video and choose to insert from your PC or online sources.

3. Adding Objects, Tables, and Charts:

- **Objects:** Go to Insert > Text Box, Shapes, or SmartArt to add various interactive elements.
- **Tables:** Go to Insert > Table and choose the desired table dimensions.
- **Charts:** Go to Insert > Chart and select the chart type and data source.

Interactive Elements:

- **Action Buttons:**

Go to Insert > Shapes and choose an action button. You can link it to a slide, a website, or another action.

- **Animations:**

Use animations to make elements appear or disappear in a specific order, {says iSpring Solutions}.

- **Morph Transition:**

The morph transition can create smooth animations between slides, creating an interactive feel.

By combining these elements, you can create engaging and informative PowerPoint presentations that guide the audience through your content effectively.

Task 3: Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), and Inserting – Background, textures, Design Templates, Hidden slides.

1️⃣ Master Layouts (Slide, Template, Notes)

☞ **Slide Master:**

- Go to View → Slide Master.
- Here, you can set the design, font style, logo, and layout that will apply to all slides.
- Useful to keep all slides uniform.

☞ **Template:**

- A template is a ready-made design (with background, font, layout).
- When you open PPT → Choose a template or go to Design tab → Pick any design template.

☞ **Notes Master:**

- Go to View → Notes Master.
- Here you can format how your speaker notes will look when printed (change font size, add logo, etc.).

2️⃣ Types of Views

- Go to View tab → You will find different views:

✅ **Normal / Basic View** — Where you create and edit slides.
✅ **Slide Sorter View** — Shows small images of all slides so you can arrange their order.
✅ **Reading View / Presentation View** — To see how the slideshow will look during presentation.
✅ **Notes Page View** — Shows slide and space to write notes for the speaker.
✅ **Outline View** — Shows only text content of all slides in list form (no images).

3️⃣ Inserting Background

- Right-click on slide → Format Background.
- Choose solid colour, gradient, picture, or texture fill.

4️⃣ Inserting Textures

- Same as background.
- Go to Format Background → Picture or texture fill → Choose from built-in textures (like canvas, wood, marble).

5.1 Design Templates

- Go to Design tab → Choose from available templates (many colour schemes, fonts, and layouts).
- This gives a professional look to your slides.

6.1 Hidden Slides

- Right-click on any slide in the slide sorter or side panel → Select Hide Slide.
- This slide will not appear during slideshow, but it will stay in the PPT file.

AI TOOLS – ChatGPT

Task 1: Prompt Engineering: Experiment with different types of prompts to see how the model responds. Try asking questions, starting conversations, or even providing incomplete sentences to see how the model completes them. • Ex: Prompt: "You are a knowledgeable AI. Please answer the following question: What is the capital of France?"

AI tools are software applications that utilize artificial intelligence algorithms to perform tasks that typically require human intelligence. These tools are designed to automate processes, analyze data, and improve decision-making across various industries. They leverage techniques like machine learning and natural language processing to achieve their goals.

Here's a more detailed explanation:

What they do:

- **Automate tasks:**

AI tools can automate repetitive or complex tasks, freeing up human workers for more strategic activities.

- **Analyze data:**

They can process large amounts of data to identify patterns, trends, and insights that might be missed by humans.

- **Improve decision-making:**

By analyzing data and providing predictions, AI tools can assist in making more informed and efficient decisions.

- **Provide insights:**

AI tools can offer valuable insights into various processes, helping organizations optimize their operations.

How they work:

- **Machine learning:**

AI tools often rely on machine learning algorithms that allow them to learn from data and improve their performance over time.

- **Natural language processing (NLP):**

NLP enables AI tools to understand and process human language, making them useful for tasks like chatbot interactions and language translation.

- **Computer vision:**

This allows AI tools to "see" and interpret images and videos, useful in applications like facial recognition and image analysis.

Examples of AI tools:

- **Chatbots:** Used for customer service and support, providing instant responses to user queries.

- **Virtual assistants:** Like Siri or Google Assistant, used for voice-activated control of devices and information retrieval.
- **AI-powered marketing tools:** Used for targeted advertising, content creation, and customer segmentation.
- **AI in healthcare:** Used for diagnostics, drug discovery, and personalized medicine.
- **AI in finance:** Used for fraud detection, risk management, and algorithmic trading.
- **AI in manufacturing:** Used for process optimization, quality control, and predictive maintenance.
- **AI in education:** Used for personalized learning experiences and automated grading.

Benefits of using AI tools:

- **Increased efficiency:** Automation of tasks and data analysis leads to increased productivity.
- **Improved accuracy:** AI tools can often perform tasks with greater accuracy than humans.
- **Cost savings:** Automation and improved efficiency can lead to reduced operational costs.
- **Better decision-making:** Access to data-driven insights enables more informed decisions.

ChatGPT is a conversational AI chatbot developed by OpenAI. It uses a large language model to generate human-like text responses to user prompts, allowing for interactive conversations and a wide range of text-based tasks. Essentially, it's a tool that can understand and respond to your questions or requests in a way that feels natural and conversational.

Here's a more detailed explanation:

- **Conversational AI:**

ChatGPT is designed to simulate human-like conversation, allowing users to interact with it through text-based prompts and receive relevant, coherent responses.

- **Large Language Model:**

It's built on a massive dataset of text and code, allowing it to understand context, generate creative text formats, answer questions, and even write different kinds of content.

- **Generative AI:**

ChatGPT is a form of generative AI, meaning it can create new content based on the input it receives.

- **Applications:**

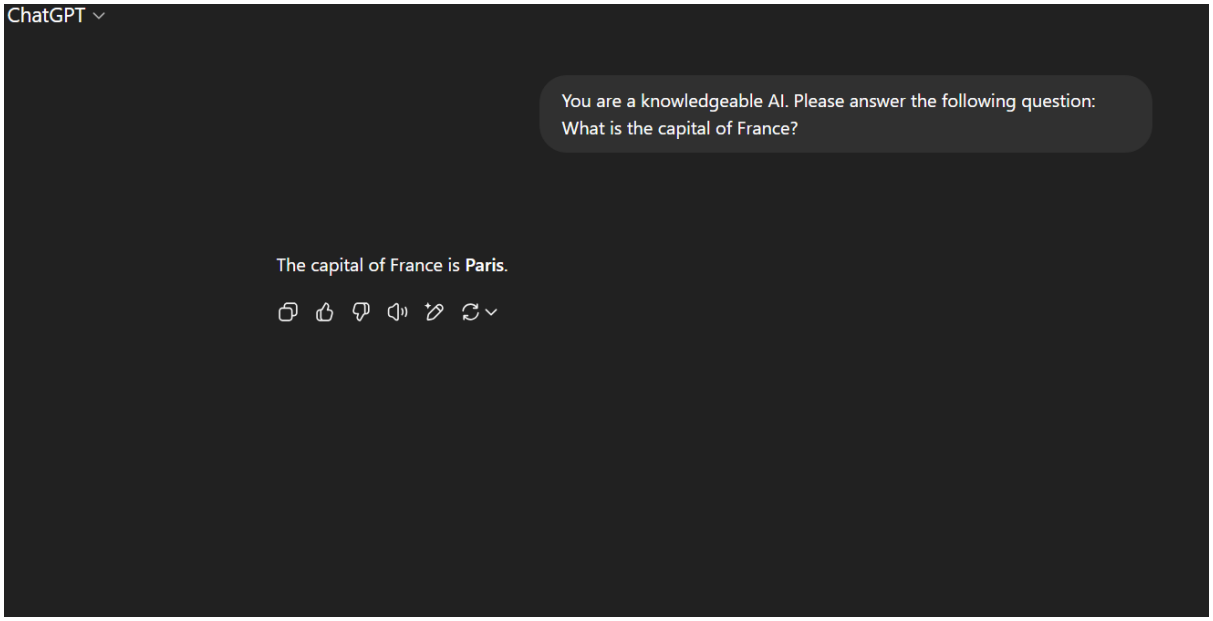
It can be used for various tasks, including writing articles, composing emails, generating code, answering questions, translating languages, summarizing text, and more.

- **OpenAI:**

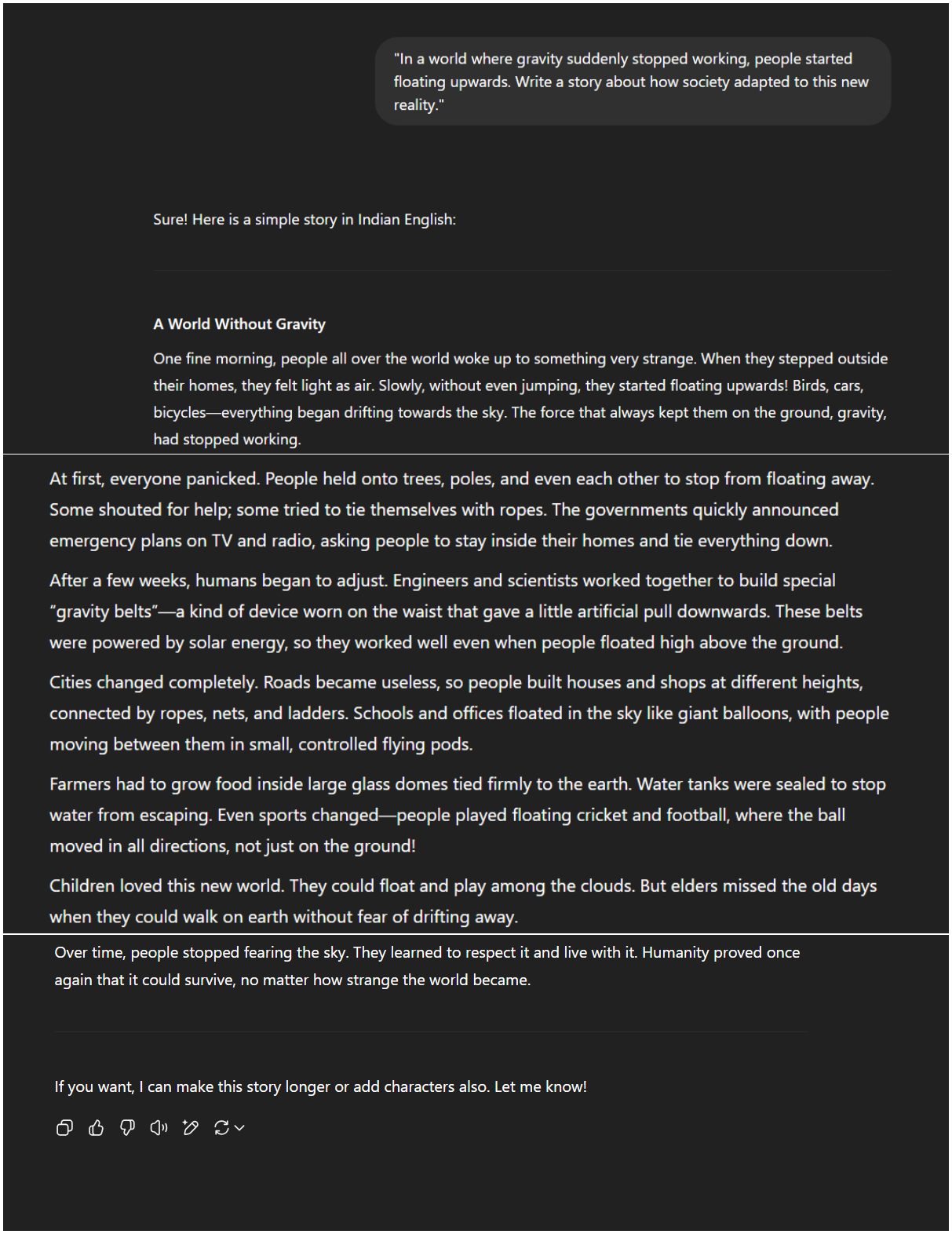
ChatGPT was developed by OpenAI, an AI research and deployment company.

- **Free and Paid Versions:**

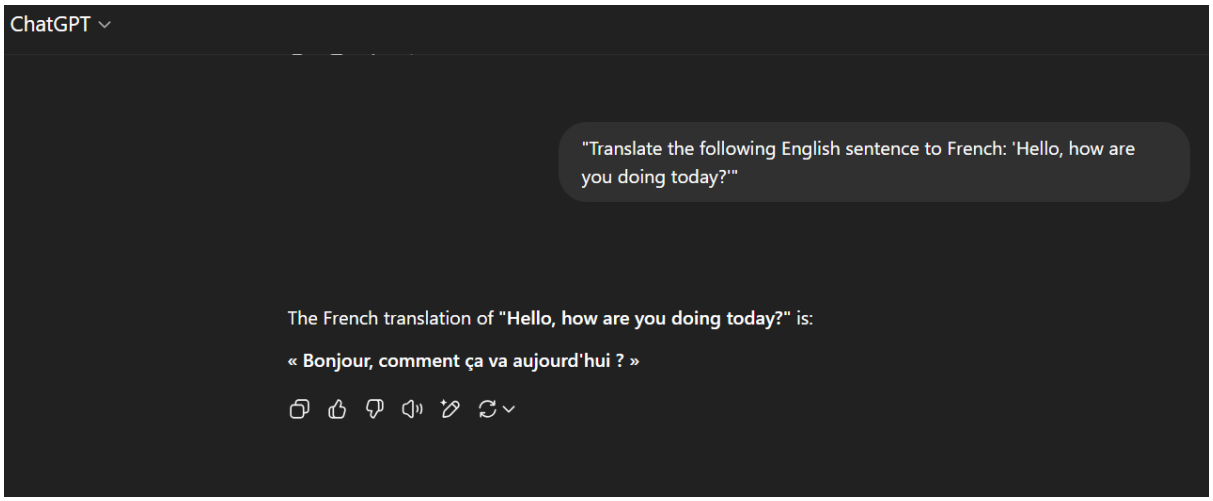
While there is a free version of ChatGPT, OpenAI also offers a paid subscription called ChatGPT Plus, which provides users with access to the latest models and features.


ChatGPT
You are a knowledgeable AI. Please answer the following question:
What is the capital of France?
The capital of France is Paris.

Task 2: Creative Writing: Use the model as a writing assistant. Provide the beginning of a story or a description of a scene, and let the model generate the rest of the content. This can be a fun way to brainstorm creative ideas • Ex: Prompt: "In a world where gravity suddenly stopped working, people started floating upwards. Write a story about how society adapted to this new reality."


"In a world where gravity suddenly stopped working, people started floating upwards. Write a story about how society adapted to this new reality."
Sure! Here is a simple story in Indian English:
A World Without Gravity
One fine morning, people all over the world woke up to something very strange. When they stepped outside their homes, they felt light as air. Slowly, without even jumping, they started floating upwards! Birds, cars, bicycles—everything began drifting towards the sky. The force that always kept them on the ground, gravity, had stopped working.
At first, everyone panicked. People held onto trees, poles, and even each other to stop from floating away. Some shouted for help; some tried to tie themselves with ropes. The governments quickly announced emergency plans on TV and radio, asking people to stay inside their homes and tie everything down.
After a few weeks, humans began to adjust. Engineers and scientists worked together to build special "gravity belts"—a kind of device worn on the waist that gave a little artificial pull downwards. These belts were powered by solar energy, so they worked well even when people floated high above the ground.
Cities changed completely. Roads became useless, so people built houses and shops at different heights, connected by ropes, nets, and ladders. Schools and offices floated in the sky like giant balloons, with people moving between them in small, controlled flying pods.
Farmers had to grow food inside large glass domes tied firmly to the earth. Water tanks were sealed to stop water from escaping. Even sports changed—people played floating cricket and football, where the ball moved in all directions, not just on the ground!
Children loved this new world. They could float and play among the clouds. But elders missed the old days when they could walk on earth without fear of drifting away.
Over time, people stopped fearing the sky. They learned to respect it and live with it. Humanity proved once again that it could survive, no matter how strange the world became.
If you want, I can make this story longer or add characters also. Let me know!

Task 3: Language Translation: Experiment with translation tasks by providing a sentence in one language and asking the model to translate it into another language. Compare the output to see how accurate and fluent the translations are. • Ex:Prompt: "Translate the following English sentence to French: 'Hello, how are you doing today?'"


ChatGPT
"Translate the following English sentence to French: 'Hello, how are you doing today?'"
The French translation of **"Hello, how are you doing today?"** is:
« Bonjour, comment ça va aujourd'hui ? »